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(Filed May 25, 1962)

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

Civil Action No. 1688-62

HAZELTINE RESEARCH, INC., 5445 West Diversey Avenue
Chicago 39, Illinois,

and

ROBERT REGIS, 193-15B, 69th Avenue Fresh Meadows,
New York

Plaintiffs,

v.

DAVID L. LADD, Commissioner of Patents,
Washington 25, D. C.

Defendant.

COMPLAINT TO OBTAIN LETTERS PATENT
TO THE HONORABLE JUDGES OF THE UNITED
STATES DISTRICT COURT FOR THE DISTRICT OF
COLUMBIA

The plaintiffs herein for their complaint state:

JURISDICTION

1. This action is brought under the provisions of the Patent Act of July 19, 1952 (Public Law 593, 82nd Congress, 2d sess., ch. 950; 66 Stat. 792); and, more particularly, Section 145 of said Act (Title 35 U.S. Code, Section 145), and under the provisions of the Administrative Procedure Act as enacted June 11, 1949, as amended, and more particularly Section 9 of said Act (Title 5 U.S. Code, Section 1009).

PARTIES

2. The plaintiff Hazeltine Research, Inc. is a corporation duly organized under the laws of the State of Illinois and has a principal place of business in Chicago, Illinois.

3. Plaintiff Robert Regis is a resident of the City of New York, County of Queens, and State of New York, is the applicant in patent application, Serial No. 704,770, filed in the United States Patent Office on December 23, 1957 and entitled "Microwave Switch", and is the original and first inventor of the invention disclosed and claimed in said application.

4. The defendant, David L. Ladd, is Commissioner of Patents of the United States, has his official residence in the District of Columbia, and this action is brought against him in his official capacity as Commissioner of Patents of the United States.

GROUNDS OF COMPLAINT

5. Prior to December 23, 1957, plaintiff Robert Regis, invented new and useful improvements in microwave switches and on or about December 20, 1957, Robert Regis, the plaintiff herein, executed an application for letters patent for the said inventions made by him and entitled "Microwave Switch".

6. On or about December 20, 1957, plaintiff Robert Regis assigned, by instrument in writing, all right, title and interest in and to his said inventions and his said application for letters patent therefor executed on or about December 20, 1957, to the plaintiff, Hazeltine Research, Inc., which assignment has not been recorded in the assignment records of the United States Patent Office. The plaintiffs herein, hereby make profert of the original copy of said assignment.

7. On or about December 23, 1957, plaintiff, Robert Regis, duly made application in writing in the United States Patent Office for the grant of letters patent to him on his invention, which application was given Serial No. 704,770. Said application Serial No. 704,770 was thereafter duly prosecuted in accordance with the requirements of law and the rules of practice of the United States Patent Office.

8. Said application Serial No. 704,770 contains the claims to which plaintiffs believe themselves entitled, such claims being numbered 1, 2 and 3.

9. Said application Serial No. 704,770 was examined by the Primary Examiner in charge thereof and he on June 24, 1959 finally rejected claims 1, 2 and 3. On September 22, 1959, plaintiffs appealed to the Board of Appeals from the Primary Examiner's final rejection of claims 1, 2 and 3. On March 28, 1962, the Board of Appeals rendered a decision which affirmed the Primary Examiner's final rejection of claims 1, 2 and 3.

10. Plaintiffs allege that the decision of the Board of Appeals adjudging them not entitled to letters patent for the invention recited in claims 1, 2 and 3 was erroneous and contrary to law and the plaintiffs are dissatisfied with the aforesaid decision of the Patent Office Board of Appeals.

11. Plaintiffs further allege that no appeal has been taken by them to the United States Court of Customs and Patent Appeals from the refusal of the Commissioner of Patents to issue Letters Patent to plaintiffs.

12. Plaintiffs make profert of a certified copy of application for Letters Patent, Serial No. 704,770, and all proceedings and papers in the file thereof, together with certified copies of the patents forming the basis for the decision of the Board of Appeals refusing to allow said claims 1, 2 and 3 and issue Letters Patent on the in-

vention in such claims, said certified copies to be produced as and when this Honorable Court shall direct.

WHEREFORE, plaintiffs pray this Honorable Court:

1. To adjudge or decree that plaintiffs are entitled to receive Letters Patent on the invention claimed in claims 1, 2 and 3 of said application Serial No. 704,770, in due form of law as prescribed by the patent statutes.

2. For a judgment pursuant to Title 35, U.S. Code Section 145 (66 Stat. 792), authorizing the Commissioner of Patents to issue Letters Patent to plaintiffs on the invention claimed in claims 1, 2 and 3 of said application Serial No. 704,770, in due form of law and as prescribed by the statutes.

3. That plaintiffs have such other and further relief as the nature of this case may admit or require and as may be just and equitable.

Respectfully,

ROBERT REGIS

/s/ Edward B. Beale

By: EDWARD B. BEALE

BEALE AND JONES

425 Thirteenth Street, N.W.

Washington 4, D. C.

Telephone NAtional 8-4304

Of Counsel:

EDWARD A. RUESTOW

59-25 Little Neck Parkway

Little Neck 62, New York

GEORGE R. JONES

425 Thirteenth Street, N.W.

Washington 4, D. C.

(Filed June 15, 1962)

* * * *

ANSWER TO COMPLAINT

To the Honorable the Judges of the United States District Court for the District of Columbia

1. The defendant admits that this action is brought under the provisions of the Patent Act of July 19, 1952, (Public Law 593, 82nd Congress, 2d sess., ch. 950; 66 Stat. 792); and, more particularly, Section 145 of said Act (Title 35 U.S. Code, Section 145). Otherwise, however, the defendant denies the allegations of paragraph 1 of the complaint.

2. The defendant asserts that he is without knowledge or information sufficient to form a belief as to the truth of the allegations of paragraph 2 of the complaint.

3. The defendant admits that the plaintiff, Robert Regis, is a resident of the City of New York, County of Queens, and State of New York, and is the applicant in patent application, Serial No. 704,776, filed in the United States Patent Office on December 23, 1957, and entitled "Microwave Switch". Otherwise, however, the defendant denies the allegations of paragraph 3 of the complaint.

4. The defendant admits the allegations of paragraph 4 of the complaint.

5. The defendant admits that on December 20, 1957, Robert Regis, the plaintiff herein, executed an application for Letters Patent entitled "Microwave Switch". The defendant asserts that, otherwise, he is without knowledge or information sufficient to form a belief as to the truth of the allegations of paragraph 5 of the complaint.

6. The defendant asserts that he is without knowledge or information sufficient to form a belief as to the truth of the allegations of paragraph 6 of the complaint.

7. The defendant admits the allegations of paragraph 7 of the complaint.

8. The defendant admits that application, Serial No. 704,770, contains claims numbered 1, 2, and 3. Otherwise, however, the defendant denies the allegations of paragraph 8 of the complaint.

9. The defendant admits the allegations of paragraph 9 of the complaint.

10. The defendant denies the allegations of paragraph 10 of the complaint.

11, 12. The defendant admits the allegations of paragraph 11 and 12 of the complaint.

FURTHER ANSWERING, the defendant asserts that the plaintiffs are not entitled to a patent containing any of claims 1, 2, and 3 of the application involved in this civil action, for the reasons given and in view of the references cited in the Examiner's answer and the decision of the Board of Appeals in that application. Proffert hereby is made of copies of the said answer, decision and references.

Respectfully submitted,

/s/ C. W. Moore
Solicitor, U. S. Patent Office
Attorney for Defendant

June 14, 1962

I hereby certify that two copies of the foregoing ANSWER TO COMPLAINT were mailed today to Edward B. Beale, 425 Thirteenth St., N.W., Washington, D. C., attorney for the plaintiffs.

/s/ C. W. Moore
Solicitor

7A

Plaintiff's Exhibit 1

• • • • •
This is to certify that annexed hereto is a true copy from the records of the United States Patent Office of File Wrapper and Contents of the file identified above.

By authority of the
COMMISSIONER OF PATENTS

/s/ L. G. Lanham, Jr.
Certifying Officer

Date May 15, 1963

Serial No. (Series of 1948)—704770

Assistant examiner—Roe

Class—333

Subclass—81

Division No.—65

Filed complete (Date)—Dec. 23, 1957

Serial No. 704 770

Applicant(s)—Regis, Robert of Fresh Meadows, N.Y.

Title of invention—Microwave Switch

Principal attorney(s)—Laurence B. Dodds

Associate attorney(s)—Edward A. Ruestow, Andrew L.
Ney

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HAZELTINE RESEARCH CORPORATION

59-25 Little Neck Parkway

Little Neck 62, N.Y.

December 20, 1957

Re: Docket 2533

Honorable Commissioner of Patents,
Washington 25, D. C.

Sir:

I enclose, for filing, an application of ROBERT REGIS for improvements in MICROWAVE SWITCH. The application papers comprise a specification, claims, Oath, Power of Attorney, and Petition, and one (1) sheet of drawing, and were executed December 20, 1957.

Enclosed also is check No. 1601, for Thirty Dollars (\$30.00), to cover the filing fee.

Respectfully,

/s/ L. B. Dodds
Attorney for Applicant.

sk
Encs.

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN that I, ROBERT REGIS, a citizen of the United States, residing at Fresh Meadows, in the county of Queens, State of New York, have invented certain new and useful improvements in

MICROWAVE SWITCH

of which the following is a specification:

This invention relates to microwave switches and, more particularly, to such switches of the type which selectively isolates a microwave source from its load.

For some applications, it is desired to isolate a microwave transmitter from its antenna load while maintaining an impedance match to the transmitter. Thus, the transmitter may be maintained continuously operative and may instantaneously radiate energy by actuating the switch without a delay due to a warm-up period.

It is an object of the invention to provide a microwave switch of the type described of simplified construction and suitable selectively to isolate a microwave transmitter from its load antenna while maintaining an approximate impedance match to the transmitter.

In accordance with a particular form of the invention, a microwave switch for selectively isolating a microwave source from its load comprises a microwave signal guide for connection to a microwave source at one end and to a load at the other end. The switch includes an attenuator vane of resistive material having a tapered end extending toward the source and having a high conductance strip at the other end thereof and displaceable in and out of

the guide for selectively isolating the source from its load when in the guide while maintaining an approximate impedance match to the source.

For a better understanding of the present invention, together with other and further objects thereof, reference is had to the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claims.

Referring to the drawing:

Fig. 1 represents one view of a microwave switch constructed in accordance with the invention, and

Fig. 2 represents another view of a switch constructed in accordance with the invention.

Referring now more particularly to Fig. 1 of the drawing, a microwave transmitter 10 of conventional construction is coupled to a microwave signal guide 11 of conventional construction having a microwave antenna 12 also of conventional construction at the other end thereof. An attenuator vane 13 of resistive material and disposed in a slot in the guide will be described with reference to Fig. 2. The vane has a tapered end 14 extending toward the transmitter 10 and has a highly conductive or shorting strip 15 of suitable material at the other end thereof. The vane is displaceable in and out of the guide 11 in the plane of maximum electric field intensity for providing an effective short circuit across the guide by means of strip 15 for selectively isolating the transmitter from its load antenna when in the guide while maintaining an approximate impedance match to the transmitter.

A suitable control device 16 may be employed to displace the vane 13 in and out of the guide 11 or, for some applications, the vane may be manually displaceable.

When the vane is out of the guide, the transmitter is coupled to the load antenna in a conventional manner.

When the vane is in the guide, as represented in Fig. 2, the resistive material of the vane absorbs energy from the transmitter while its tapered configuration causes a gradual change of impedance along the guide and thus maintains an approximate impedance match to the transmitter to minimize reflections back to the transmitter which would disrupt its operation. Thus, energy at an attenuated level reaches the shorting strip 15 where it is reflected toward the transmitter and is still further attenuated while passing the vane.

It has been found that an over-all attenuation in the order of 30 to 80 decibels may be provided by means of a vane $4\frac{1}{2}$ inches long at a broad band of frequencies of the order of 8,200 to 9,600 megacycles. In providing the effective short circuit across the guide, the shorting strip 15 may or may not touch the walls of the wave guide as desired.

From the foregoing description it will be seen that a microwave switch constructed in accordance with the invention has the advantages of being of simple construction and being capable of isolating the transmitter from its load antenna while maintaining an approximate impedance match to the transmitter.

While there has been described what is at present considered to be the preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore, aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

WHAT IS CLAIMED IS:

1. A microwave switch for selectively isolating a microwave source from its load comprising: a microwave signal guide for connection to a microwave source at one end and to a load at the other end; and an attenuator vane of

resistive material having a tapered end extending toward said source and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said source from its load when in said guide while maintaining an approximate impedance match to said source.

2. A microwave switch for selectively isolating a microwave source from its load comprising: a microwave signal guide for connection to a microwave source at one end and to a load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said source and having a shorting strip at the other end thereof and displaceable in and out of said guide in the plane of maximum electric field intensity for providing an effective short circuit across said guide for selectively isolating said source from its load when in said guide while maintaining an approximate impedance match to said source.

3. A microwave switch for selectively isolating a microwave transmitter from its antenna load comprising: a microwave signal guide for connection to a microwave transmitter at one end and to an antenna load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said transmitter and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said transmitter from its load when in said guide while maintaining an approximate impedance match to said transmitter.

4. A microwave switch of the type specified and substantially as illustrated in the drawing and described in the specification with reference thereto.

Oath, Power of Attorney, and Petition

Being duly sworn, I, ROBERT REGIS depose and say that I am a citizen of the United States residing at Fresh Meadows, New York; that I have read the foregoing specification and claims and I verily believe I am the original, first, and sole inventor of the invention or discovery in MICROWAVE SWITCH described and claimed therein, that I do not know and do not believe that this invention was ever known or used before my invention or discovery thereof, or patented or described in any printed publication in any country before my invention or discovery thereof, or more than one year prior to this application, or in public use or on sale in the United States for more than one year prior to this application; that this invention or discovery has not been patented in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months before this application; and that no application for patent on this invention or discovery has been filed by me or my representatives or assigns in any country foreign to the United States, except as follows: No exceptions.

And I hereby appoint LAURENCE B. DODDS (Registration No. 12,982), whose address is 59-25 Little Neck Parkway, Little Neck 62, N.Y., my principal attorney with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith.

It is requested that all communications from the Patent Office in connection with the above-entitled application be addressed to LAURENCE B. DODDS at 59-25 Little Neck Parkway, Little Neck 62, N. Y.

Wherefore I pray that Letters Patent be granted to me for the invention or discovery described and claimed in the foregoing specification and claims, and I hereby subscribe my name to the foregoing specification and claims, oath, power of attorney, and this petition, this 20th day of December, 1957.

Inventor: /s/ Robert Regis

Post Office Address: 193-15B 69th Avenue
Fresh Meadows 62, New York

State of New York)
County of Queens) SS.

Before me personally appeared ROBERT REGIS to me known to be the person described in the above application for patent, who signed the foregoing instrument in my presence, and made oath before me to the allegations set forth therein as being under oath, on the day and year aforesaid.

/s/ Caroline B. Scott
CAROLINE B. SCOTT
Notary Public

SEAL

Notary Public State of New York
No. 30-8887200
Qualified in Nassau County
Cert. Filed with Queens County Clerk
Commission Expires March 30, 1968

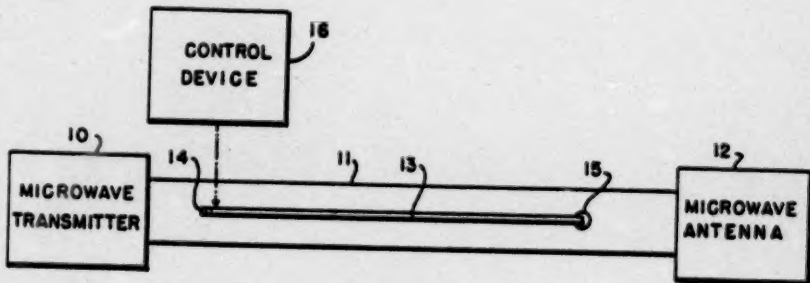


FIG. 1

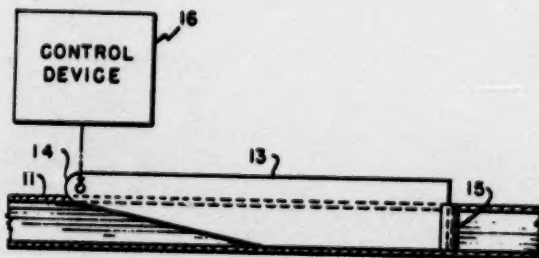


FIG. 2

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IN THE UNITED STATES PATENT OFFICE

Division 69

In re application of

ROBERT REGIS

Serial No. 704,770

Filed December 23, 1957

For: MICROWAVE SWITCH

ASSOCIATE POWER OF ATTORNEY

Honorable Commissioner of Patents

Washington 25, D. C.

Sir:

The undersigned attorney of record in the above-entitled application hereby appoints

EDWARD A. RUESTOW

(Registration No. 15,014), whose address is 59-25 Little Neck Parkway, Little Neck 62, New York, his associate attorney, with full power to prosecute said application, to make alterations and amendments in said application, to receive the patent, and to transact all business in the Patent Office connected therewith.

It is requested that all communications from the Patent Office in connection with the above-entitled application be addressed to LAURENCE B. DODDS at 59-25 Little Neck Parkway, Little Neck 62, New York.

Respectfully,

/s/ L. B. Dodds

Attorney for Applicant

Little Neck, New York

Dated: January 15, 1958

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U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
Washington

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, N.Y.

Paper No. 4
Applicant: Robert Regis
Ser. No. 704,770
Filed December 23, 1957
For MICROWAVE SWITCH
Mailed July 7, 1958—Pat. Div. 69

*Please find below a communication from the EXAM-
INER in charge of this application.*

/s/ Robert C. Watson
Commissioner of Patents.

This application has been examined.

References applied:

Carlson 2,491,644 Dec. 20, 1949 333-81B

Bollinger, abstract of application Serial number 694,044
published November 21, 1950 640 O.G. 1032. 333-98S

Claims 1-3 are rejected as being unpatentable over
Carlson in view of Bollinger. No invention is seen in
using the switch of Bollinger in the attenuator of Carlson
since no new or unobvious result is produced thereby.

Claim 4 is rejected as being obviously nonstatutory.

/s/ J. E. Sax
Examiner

HSH
HSHertz:ap

18 A

IN THE UNITED STATES PATENT OFFICE

Division 69

In re application of

ROBERT REGIS

Serial No. 704,770

Filed December 23, 1957

For: MICROWAVE SWITCH

Honorable Commissioner of Patents

Washington 25, D. C.

Sir:

In response to the Office Action dated July 7, 1958, please amend the above-identified application as follows: Cancel claim 4.

REMARKS

Reconsideration and allowance of claims 1-3, inclusive, rejected as being unpatentable over patent 2,491,644—Carlson in view of abstract of application Serial No. 694,044—Bollinger, are respectfully requested.

Bollinger discloses a device comprising a series-resonant circuit which is effectively connected in shunt with the wave propagation system. Applicant believes this inherently causes his device to be a narrow band shunt. Applicant in his invention makes use of a shorting strip of suitable material which is highly conductive. This strip acts as a broad band shunt.

It is submitted that each of the claims under consideration does define invention over the cited references which lack one or more of the essential features of applicant's invention. Considering claim 1 as typical, that claim distinguishes from the references in that the references taken alone or in combination do not show:

"* * * and an attenuator vane of resistive material having a tapered end extending toward said source and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said source from its load when in said guide while maintaining an approximately impedance match to said source."

Carlson, taken alone, cannot achieve the degree of attenuation that applicant's invention is capable of achieving because the reference lacks the shorting strip. Combining Bollinger with Carlson, the degree of attenuation would be increased but only over a narrow band since Bollinger discloses a series-resonant circuit. Neither of the references discloses a highly conductive shorting strip.

This amendment is believed to place the application in condition for allowance, which action is respectfully solicited.

Respectfully submitted,

/s/ L. B. Dodds
Attorney for Applicant

Little Neck, New York

Dated: October 29, 1958

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U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
Washington

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, N.Y.

Paper No. 6
Applicant: Robert Regis
Ser. No. 704,770
Filed December 23, 1957
For MICROWAVE SWITCH
Mailed Jan. 20, 1959—Pat. Div. 69

*Please find below a communication from the EXAM-
INER in charge of this application.*

/s/ Robert C. Watson
Commissioner of Patents.

Responsive to amendment filed October 30, 1958.
Reference applied:

Wallace 2,822,526 Feb. 4, 1958 333-81B
(Filed Mar. 24, 1954)

Claims 1-3 are rejected as being unpatentable over
Wallace cited in view of Carlson. No invention is seen
in designing the switch of Wallace in shape of a vane
as suggested by Carlson of record since no new or un-
obvious result would be produced thereby.

/s/ J. E. Sax
Examiner

HSH
HSHertz:ap

IN THE UNITED STATES PATENT OFFICE

Division 69

In re application of

ROBERT REGIS

Serial No. 704,770

Filed December 23, 1957

For: MICROWAVE SWITCH

Honorable Commissioner of Patents
Washington 25, D. C.

Sir:

This is in response to the Office Action dated January 20, 1959.

REMARKS

Reconsideration and allowance of claims 1-3, inclusive, rejected as being unpatentable over Wallace, et al., patent No. 2,822, 526, in view of Carlson, patent No. 2,491,644, are respectfully requested.

The Carlson reference discloses an attenuator vane which, while attenuating the signal, also presents a match to the source. Basically, the Carlson disclosure is not a switch but rather an attenuator. Since the attenuator lacks a shorting stub, a portion of the signal will still pass the attenuator even when the vane is inserted into the guide for minimum attenuation.

Wallace et al disclose two embodiments of a wave guide shutter. The first embodiment is subject to the same shortcoming as is the Carlson disclosure. More particularly, when the semicylindrical member 14 of Fig. 1 is inserted into the guide, a portion of the signal will still pass the shutter. In addition, the member 14 presents a mismatch while being inserted into the guide. In the second embodiment, the operation of which is sim-

ilar to the first, there is shown in Figs. 3 and 4 a metallic member which may inherently act as a shorting stub. However, the reference makes no mention of this as the function of the metallic member. The reference only refers to the energy-absorbing material 19 of Figs. 3 and 4 as that member which functions to attenuate the signal. The only reference made to the metallic member 26 is in explaining it to serve to close the opening in the wall of the wave guide when the shutter is in the open position. No reference is made to this metallic member with respect to attenuating the signal. It is, therefore, not known whether such a member will function to provide such results. Applicant, therefore, submits that the Wallace et al reference should not be considered as anticipating applicant's invention.

Applicant further submits that the Wallace et al reference is an improper reference in that it was a co-pending application. The issue date of February 4, 1958 is after applicant's filing date of December 23, 1957. Consequently, Wallace et al are not part of the prior art and can only be considered under Section 102 (e) from the standpoint of whether it alone "describes" applicant's invention. Section 102 (e) enacts the rule of *Milburn v. Davis-Bournonville*, 270 U.S. 290, to the same effect. Wallace et al are not part of the prior art because it was secret in the Patent Office when applicant filed as 35 U.S.C. 122 provides.

This application is now believed to be in condition for allowance, which action is respectfully requested.

Respectfully submitted,

/s/ E. A. Ruestow
Attorney for Applicant

Little Neck, New York

Dated: June 2, 1959

U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
Washington

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, N.Y.

Paper No. 8
Applicant: Robert Regis
Ser. No. 704,770
Filed December 23, 1957
For MICROWAVE SWITCH
Mailed Jun. 24, 1959—Pat. Div. 65

*Please find below a communication from the EXAM-
INER in charge of this application.*

/s/ Robert C. Watson
Commissioner of Patent.

Responsive to letter filed June 4, 1959.

Claims 1-3 are again rejected as being unpatentable over Wallace in view of Carlson. No invention is seen in designing the switch of Wallace in the shape of a vane as suggested by Carlson since no new or unobvious result is produced thereby.

Applicant's argument on page 2, lines 15-20 of paper No. 7 is untenable. When the member 26 of Wallace is in the position shown in Fig. 4, it necessarily functions as a short circuit across the wave guide 22. There is no showing in the case to the contrary.

Applicant's argument on the bottom of page 2 and page 3 of paper No. 7 (filed June 4, 1959) that Wallace is an improper reference is also untenable. See *In re Gregg* 1957 C.D. 284.

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This action has been taken up out of its regular turn under the authority of Commissioner's Order No. 3084, October 29, 1928 (708.01 M.P.E.P.).

Since an issue has clearly been reached, this action is made *FINAL*.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS ACTION IS SET TO EXPIRE SEPTEMBER 25, 1959.

/s/ J. E. Sax
Examiner

HSH
HSHertz:ap

25 A

IN THE UNITED STATES PATENT OFFICE

Division 65

In re application of
ROBERT REGIS
Serial No. 704,770
Filed December 23, 1957
For: MICROWAVE SWITCH

APPEAL TO THE BOARD OF APPEALS

Honorable Commissioner of Patents
Washington 25, D. C.

Sir:

Appeal is hereby taken to the Board of Appeals from the decision of the Primary Examiner finally rejecting claims 1-3, inclusive, of the subject application.

Check in the amount of Twenty-five Dollars (\$25.00) covering the appeal fee is enclosed herewith.

Respectfully submitted,

/s/ E. A. Ruestow
Attorney for Applicant

Little Neck, New York

Dated: September 21, 1959

Enclosure

* * * *

IN THE UNITED STATES PATENT OFFICE

Appeal No. 290-98

In re application of

ROBERT REGIS

Serial No. 704,770

Filed December 23, 1957

For: MICROWAVE SWITCH

BRIEF ON APPEAL

This is an Appeal from the Final Rejection of claims 1-3, inclusive, rejected as being unpatentable over Wallace et al—Patent No. 2,822,526 in view of Carlson—Patent No. 2,491,644. Oral hearing is requested. Accordingly, this Brief is submitted in triplicate (Rule 192). A copy of the claims in issue is appended to the Brief.

THE INVENTION

This invention relates to microwave switches and, more particularly, to the type which selectively isolate a microwave source from its load.

Referring to Fig. 1, a microwave source such as the microwave transmitter 10 is coupled to a microwave antenna 12 through a wave guide 11. An attenuator vane 13 of resistive material is disposed in a slot in the guide. As shown in Fig. 2, the vane has a tapered end extending toward the transmitter and has a highly conductive or shorting strip 15 of suitable material at the other end thereof. While the vane is in the slot an effective short circuit exists across the guide. When the vane is removed from the slot the transmitter is coupled to the antenna in a conventional manner.

When the vane is in the guide the resistive material absorbs the energy from the transmitter. Because of the configuration of the vane the signal reaching the shorting strip is attenuated. After reflection at the shorting strip the signal is further attenuated, thereby causing no disruption of the operation of the transmitter.

THE REJECTION

The Examiner contends that claims 1-3, inclusive, are unpatentable over Wallace et al in view of Carlson.

There is no need to discuss the actual disclosures of Wallace et al and Carlson in view of the arguments which follow. Suffice it to say that Examiner asserts that it is possible to combine them as an engineering matter to arrive at applicant's invention. We shall accept the assertion as valid for purposes of argument.

COPENDING REFERENCES

Applicant contends that the Wallace et al reference cannot be combined with any other reference because it was copending with applicant's application. The issue date of February 4, 1958, is after applicant's filing date of December 23, 1957. Applicant insists that any copending reference, such as Wallace et al, is not part of the prior art and must stand alone against the present application on the limited question of whether it actually describes applicant's invention. Admittedly, the case law is in conflict. But, the Patent Act of 1952 turns the balance.

The status of all patents relied on by the Examiner is determined solely by 35 USC 102 and 35 USC 103.

Section 102 begins with the statement:

"A person shall be entitled to a patent unless * * * clearly indicating that the immediately following list (a), (b), (c), (d), (e), (f) and (g) of such grounds for invalidation is exclusive of all others not stated there or in Section 103. Grounds (b), (c), (d) and (f) are obviously inapplicable to the present issue. The others read in pertinent part:

"(a) *the invention* was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

"(e) *the invention* was described in a patent granted on an application for patent *by another* filed in the United States before the invention thereof by the applicant for patent, or

"(g) before the applicant's invention thereof *the invention* was made in this country by another who had not abandoned, suppressed, or concealed it. * * *

The wording of the list, particularly in view of the underscored* portions which find their counterpart in some of the grounds not quoted, clearly indicates that for any one of the grounds of invalidation to be applicable, *the invention* must be found in one reference as an integrated whole—all in one place, so to speak—not synthesized from separate references. If emphasis of this point were needed, it would be found in the first three lines of Section 103 which states in pertinent part:

"A patent may not be obtained though the invention is not *identically* disclosed or described *as set forth* in section 102 of this title, if the difference between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. * * *

*—Italicized Herein

and also in the following reference to Section 103 in the Report of the Committee on the Judiciary:

"* * * An invention which has been made, and which is new in the sense that the *same thing* has not been made before, may still not be patentable * * *." (82nd Congress, House Report, No. 1923, May 12, 1952).

This can only mean that Section 102 was intended to refer to a *disclosure of the complete invention in one reference* and that Section 103 was intended to supply the only exception.

Particularly as to Section 102(a), the fact that the case law on prior knowledge and use requires a complete integrated disclosure, shows that this is what the Act also contemplates.

Section 103 adds a more general ground of invalidation since it is the only provision permitting one to synthesize an anticipation from scattered elements of the prior art.

The very existence of Section 102(e) makes it obvious that copending patents are recognized as a special situation. In this situation, by standard canons of interpretation, the juxtaposition of Sections 102 and 103 leads to the conclusion that only Section 102(e) is applicable to a copending patent reference, such as *Wallace et al*, which was filed before the immediate application but issued thereafter.

It has always been held that specific terms of a statute prevail over general terms. Thus in *Fourco v. Transmirra* (1957), 353 U.S. 222; 113 USPQ 234, the Supreme Court held that the general corporation venue statute 28 USC 1391(c) was inapplicable in patent infringement actions by virtue of the special venue statute 28 USC

1400(b) which prescribes venue in patent actions. The Court said:

"We think it is clear that Section 1391(c) is a general corporation venue statute, whereas Section 1400(b) is a special venue statute applicable, specifically, to *all** defendants in a particular type of actions, i.e., patent infringement actions. In these circumstances the law is settled that *'However inclusive may be the general language of a statute, it "will not be held to apply to a matter specifically dealt with in another part of the same enactment. * * * Specific terms prevail over the general in the same or another statute which otherwise might be controlling."*' Ginsberg & Sons v. Popkin, 285 U.S. 204, 208; MacEvoy Co. v. United States, 322 U.S. 102, 107." (*Emphasis Court's)

By its very terms Section 102(e) is specific to the situation of a copending patent. Moreover, it is specific for the further reason of its very history. This paragraph (e), as the Reviser's notes (House Report 1923; 35 U.S.C.A. 102) state, enacts the rule of *Milburn v. Davis-Bournonville*, 270 U.S. 390. In that case the Court ruled that a copending United States patent, which gives "*a complete and adequate description of the thing*" (p. 399, again on p. 400), claimed in a later filed patent, dates from the date of filing of the copending application for the purpose of showing that the later applicant could not be the first inventor even though the copending patent issued after the later inventor filed.

Moreover, if Section 103 were applicable to copending patents, Section 102(e) would be rendered meaningless; if a copending patent is prior art under Section 103, there is no need for Section 102(e). An interpretation which renders any provision meaningless has always been held to be improper:

"* * * We are not at liberty to construe any statute so as to deny effect to any part of its lan-

guage. It is a cardinal rule of statutory construction that significance and effect shall, if possible, be accorded to every word. (p. 115)

"* * * Another rule equally recognized is, that every part of a statute must be construed in connection with the whole, so as to make all the parts harmonize, if possible, and give meaning to each." (p. 116) *Washington Market Co. v. James A. Hoffman*, 101 U.S. 112, (followed in *Ex parte Public National Bank of New York*, 278 U.S. 101, 104.)

It is clear then that Section 102(e) is to stand alone. And if it is to stand alone, we ought to examine its precise words. It says: "the invention was described". This language stands out. It has a peremptory command in it; *the invention* must be pointed out. That is the ordinary meaning of the word "describe". The language does not say that it will suffice if one can look at the copending patent and synthesize the missing parts from true prior art.

The conclusion that Section 103 is inapplicable to copending patents is reinforced by Section 122 and by numerous prior decisions holding that copending patents are not part of the prior art for the simple reason that the patent application is not publicly available knowledge until the patent issues. Copending patent applications have always been kept in secrecy in the Patent Office and Section 122 now specifically so provides. Section 122 reads:

"Section 122. Confidential status of applications

Applications for patents shall be kept in confidence by the Patent Office and no information concerning the same given without authority of the applicant or owner unless necessary to carry out

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the provisions of any Act of Congress or in such special circumstances as may be determined by the Commissioner." 35 USC 122

Respectfully submitted,

/s/ E. A. Ruestow
Attorney for Applicant

Little Neck, New York
Dated: October 29, 1959

APPENDIX

1. A microwave switch for selectively isolating a microwave source from its load comprising: a microwave signal guide for connection to a microwave source at one end and to a load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said source and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said source from its load when in said guide while maintaining an approximate impedance match to said source.

2. A microwave switch for selectively isolating a microwave source from its load comprising: a microwave signal guide for connection to a microwave source at one end and to a load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said source and having a shorting strip at the other end thereof and displaceable in and out of said guide in the plane of maximum electric field intensity for providing an effective short circuit across said guide for selectively isolating said source from its load when in said guide while maintaining an approximate impedance match to said source.

3. A microwave switch for selectively isolating a microwave transmitter from its antenna load comprising: a microwave signal guide for connection to a microwave transmitter at one end and to an antenna load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said transmitter and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said transmitter from its load when in said guide while maintaining an approximate impedance match to said transmitter.

U. S. DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
Washington

Before the Board of Appeals

Mr. Laurence B. Dodds for Appellant

This is an appeal from the final rejection of claims 1-3. No claims are allowed.

A correct copy of the appealed claims appears on page 1a of the applicant's brief.

Carlson 2,491,644 Dec. 20, 1949
Wallace et al. 2,822,526 Feb. 4, 1958
(Filed Mar. 24, 1954)

A description of the claimed switch, of the devices shown in the references and the application of the references to the claims are not believed to be necessary for the following reason. The instant appeal raises only a question of law, namely whether or not the two references, one of which was copending with the instant application, may be combined in the holding that claims 1-3 are unpatentable. The rejection was on one patent issued on an application filed prior to the filing date of the instant application, but issued subsequent to such

date, in view of a second patent issued prior to the filing date of the instant application. Appellant concedes that if these two patents are available for use as references that can be combined, their combination negatives patentability on the claim. This concession is expressed in the brief in the sentences on page 2, lines 14-19, as follows:

"There is no need to discuss the actual disclosures of Wallace et al. and Carlson in view of the arguments which follows. Suffice it to say that Examiner asserts that it is possible to combine them as an engineering matter to arrive at applicant's invention. We shall accept the assertion as valid for purposes of argument."

The facts to this issue are as follows:

(1) The Carlson patent was issued prior to the filing date (December 23, 1957) of the present application, while the Wallace et al. patent issued after the filing date of the present application, but was filed (March 24, 1954) earlier than the present application.

(2) The two patents are to inventors different from the one in the present application and no common assignment is apparent.

(3) Applicant has not sworn back of either reference under the provision of Rule 131.

(4) In utilizing the Carlson and Wallace et al. patents as references the Examiner followed the instruction set forth in the third paragraph of Section 706.02 of the Manual of Patent Examining Procedure, as supported by the decisions cited therein and also the decision of *In re Gregg*, 1957 C.D. 284.

Applicant's arguments have been considered, but are not seen as being persuasive as to the alleged intent of the Patent Act of 1952. It appears to have been well settled law prior to the 1952 Patent Act that co-pending

patents having valid effective dates takes singly or in combination, were available as references and that nothing in the Patent Act of 1952 effected a change in this procedure. For authority as to this conclusion, the Examiner cites the following Board of Appeals decisions:

Ex parte Teague and De Padova 108 U.S.P.Q. 380.

Ex parte Machlarski 111 U.S.P.Q. 459.

Ex parte Kuzmitz 113 U.S.P.Q. 255.

In each of the above cases, substantially the same arguments as advanced in applicant's brief were raised, and in each case, it was held that the Patent Act of 1952 did not change the established policy of utilizing co-pending patents having valid effective dates as references.

In addition the following statement by the Court of Customs and Patent Appeals (In re Gregg 1957 C.D. 284) appears to be directly in point and is quoted in its entirety.

"We are unable to agree with appellant that the prior art referred to in section 103 of the 1952 Act is limited to art which was available to the public prior to the date of the applicant's invention. The section clearly does not make any express statement to that effect, and no reason appears for reading such a limitation into it. It was well settled prior to the 1952 Act that a patent issued on an application which was copending with that of another applicant could properly be used as a reference against the claims of the other applicant even though it did not disclose everything claimed, and it was necessary to combine it with other references. In re Seid, 34 C.C.P.A. (Patents) 1039, 161 F. 2d 229, 73 USPQ 431, and cases there cited. There is nothing to indicate that any change in that practice was contemplated by the Congress when it enacted the Patent Act of 1952."

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For the above reasons, the Carlson and Wallace et al. patents are believed to be properly combined. Therefore, since applicant does not otherwise contend that these references are not applicable to claims 1-3, the rejection of these claims is considered proper and should be affirmed.

Respectfully submitted,

/s/ J. E. Sax
Examiner, Div. 65

HSH
HSHertziap

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, N.Y.

U. S. DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
Washington

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, New York

Paper No. 12
Appeal No.: 290-98
Appellant: REGIS, ROBERT
Serial No.: 704,770

Hearing

Date: May 31, 1962
Time: 9:30 A.M.

NOTICE OF HEARING

The appeal in the above identified case will be heard by the Board of Appeals on the date indicated.

The hearings will commence at the time set and as soon as the argument in one case is concluded, the succeeding case will be taken up.

The time allowed for argument is thirty minutes unless additional time is requested and permitted before the argument is commenced.

By Order of the Board of Appeals.

/s/ Nicholas Hahn
Administrative Officer

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IN THE UNITED STATES PATENT OFFICE

Division 65

Appeal No. 290-98

In re application of
ROBERT REGIS
Serial No. 704,770
Filed December 23, 1957
For: MICROWAVE SWITCH

ASSOCIATE POWER OF ATTORNEY

Honorable Commissioner of Patents
Washington 25, D. C.

Sir:

The undersigned attorney of record in the above-entitled application hereby appoints

ANDREW L. NEY

(Registration No. 20,300), whose address is 59-25 Little Neck Parkway, Little Neck 62, New York, his associate agent, with full power to prosecute said application, to make alterations and amendments in said application, to receive the patent, and to transact all business in the Patent Office connected therewith.

It is requested that all communications from the Patent Office in connection with the above-entitled application be addressed to LAURENCE B. DODDS at 59-25 Little Neck Parkway, Little Neck 62, New York.

Respectfully,

/s/ L. B. Dodds

Attorney for Applicant

Little Neck, New York

Dated: September 27, 1961

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U. S. DEPARTMENT OF COMMERCE
PATENT OFFICE
Washington 25, D.C.

January 11, 1962

Paper No. 14
Appeal No.: 290-98
Appellant: Regis, Robert
Serial No.: 704,770

Hearing

Date: March 20, 1962
Time: 9:30 A.M.

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, N.Y.

NOTICE OF HEARING

The appeal in the above identified case will be heard by the Board of Appeals on the date indicated.

The hearings will commence at the time set and as soon as the argument in one case is concluded, the succeeding case will be taken up.

The time allowed for argument is thirty minutes unless additional time is requested and permitted before the argument is commenced.

By Order of the Board of Appeals.

/s/ Nicholas Hahn
Administrative Officer

Hearing in this case re-set in view of the increase in personnel permitting the Board to advance hearing dates of some cases.

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IN THE UNITED STATES PATENT OFFICE

Appeal No. 290-98

In re application of
ROBERT REGIS
Serial No. 704,770
Filed December 23, 1957
For: MICROWAVE SWITCH

APPEAL TO THE BOARD OF APPEALS

On review, the request for oral hearing is withdrawn for the reason that it is believed that the brief filed on this appeal adequately clarifies the issues.

Accordingly, it is requested that the hearing set for March 20, 1962 be cancelled.

Respectfully submitted,

/s/ Andrew L. Ney
Associate Agent for Applicant

Little Neck, New York

Dated: January 30, 1962

IN THE UNITED STATES PATENT OFFICE

Appeal No. 290-98

BEFORE THE BOARD OF APPEALS

Mailed Mar. 28, 1962

U.S. Patent Office, Board of Appeals

Ex parte Robert Regis

Application for Patent filed December 23, 1957, Serial No. 704,770. Microwave Switch.

Messrs. Laurence B. Dodds, Edward A. Ruestow, and Andrew L. Ney for appellant.

Before McCann, Kreek and Keely, Examiners-in-Chief.
Keely, Examiner-in-Chief.

This is an appeal from the final rejection of claims 1, 2 and 3, all the claims now in the case.

Claim 1 is representative and reads as follows:

1. A microwave switch for selectively isolating a microwave source from its load comprising: a microwave signal guide for connection to a microwave source at one end and to a load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said source and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said source from its load when in said guide while maintaining an approximate impedance match to said source.

The references relied upon are:

Carlson 2,491,644 Dec. 20, 1949

Wallace et al. 2,822,526 Feb. 4, 1958

The rejected claims relate to a microwave switch which is adequately described in appellant's brief to which reference is made.

The claims stand rejected as being unpatentable over Wallace et al. in view of Carlson.

It is asserted by the Examiner that appellant has conceded that if the patent to Wallace et al. is available as a reference then it may be combined with Carlson and that the combination negatives invention in the instant case.

It is the position of the Examiner that prior to the 1953 (sic) Patent Act copending patents either singularly or in combination were valid references. He contends that said Act has not changed this situation and he cites our decisions *Ex parte* Teague et al., 108 USPQ 380; *Ex parte* Machlanski, 111 USPQ 459; and *Ex parte* Kuzmitz, 113 USPQ 255 as well as the Court of Customs and Patent Appeals decision in *In re Gregg*, 44 CCPA 904, 1957 C.D. 284, 720 O.G. 227, 244 F.(2d) 316, 113 USPQ 526 as supporting his position.

Appellant challenged the rejection contending that Wallace et al. is not prior art and for this reason cannot be combined with Carlson.

It is urged by appellant that 35 U.S.C. 102 requires that an appellant must be granted a patent unless one of the prohibitions of the seven sub-paragraphs of this section applies. He considers sub-paragraphs (a), (e) as being the only ones applicable. Pointing to the term "the invention" of these paragraphs he argues that the quoted term requires that his complete device must be found in a single reference before Section 102 is applicable.

He submits that his arguments are fortified by the terms of 35 U.S.C. 103, which uses the following language in referring to 35 U.S.C. 102,

"... not identically disclosed or described as set forth in section 102"

He concludes that Section 102 restricts the prior art to a single reference, and that Section 103 was intended to supply the only exception.

Turning next to Section 103, he urges that if this Section relates to copending patents then it would be in conflict with Section 102(e) and the latter would be unnecessary. He contends that such an interpretation of the statutes is improper and that Section 102(e) is to stand alone in relation to copending patents.

He considers that his reasoning that Section 103 is inapplicable to copending patents is reinforced by Section 122 which requires that patent applications be kept in secrecy, as well as by numerous decisions holding that copending patents are not part of the prior art for the simple reason that the patent application is not publicly available until the patent issues.

We have reviewed the pertinent sections of the statutes and case law in the light of the Examiner's and appellant's remarks and as a result of our review are in full accord with the position of the Examiner.

It appears to us that the issues raised by appellant have been decided by the Court of Customs and Patent Appeals in *In re Gregg* as well as by us in our previous decisions cited above.

The arguments in appellant's brief appear to be pointless. On page 6, appellant admits that 35 U.S.C. 102(e) enacts the rule of *Milburn Co. v. Davis Bournonville Co.*, 1926 C.D. 303, 344 O.G. 817, 270 U.S. 390, which held that a patent was a reference for what it disclosed as of its filing date.

It is obvious that Wallace et al., as of his filing date, had the structure necessary for modifications in the light of Carlson to achieve the disputed claimed structure. Appellant has admitted that the modification is ob-

vious. Under these circumstances the claimed structure was obviously within the grasp of Wallace et al. about three years and nine months prior to appellant's entry into the field.

Section 103, as we view it, concerns itself only with the circumstances under which a reference that is not anticipatory of the claimed device or method may be used. This section complements sub-paragraphs (a), (b), (e) and (g) of 102 without indicating the type of evidence which will be used to establish obviousness, the qualification of the evidence being found in other sections of the statute and pertinent case law, as for example the cases cited above.

Accordingly, we will sustain the rejection of the claims.

We have carefully considered the contentions and arguments presented in appellant's brief but we are of the opinion that the Examiner's rejection was proper and it will be sustained.

The decision of the Examiner is affirmed.

AFFIRMED

/s/ L. P. McCann
Examiner-in-Chief

/s/ Louis F. Kreek
Examiner-in-Chief

/s/ J. E. Keely
Examiner-in-Chief
Board of Appeals

Laurence B. Dodds
59-25 Little Neck Parkway
Little Neck 62, New York

U. S. DEPARTMENT OF COMMERCE

PATENT OFFICE

Washington

Re: Application of
Robert Regis
Serial No. 704,770
Filed December 23, 1957
For: Microwave Switch

NOTICE OF CIVIL ACTION UNDER 35 U. S. C. 145

A civil action No. 1688-62, under 35 U.S.C. 145, entitled Hazeltine Research, Inc. and Robert Regis v. David L. Ladd, Commissioner of Patents, involving this application, was filed in the United States District Court for the District of Columbia, on May 25, 1962.

/s/ C. W. Moore
Solicitor

* * * *

Plaintiff's Exhibit 2

ASSIGNMENT

In consideration of One Dollar and other good and valuable consideration, the receipt of which is hereby acknowledged, I, ROBERT REGIS, of Fresh Meadows, New York, sell and assign to HAZELTINE RESEARCH, INC., a corporation of Illinois, of 5445 West Diversey Avenue, Chicago 39, Illinois, its successors, assigns and nominees, the invention relating to improvements in

MICROWAVE SWITCH

invented by me, and the application for United States Patent therefor executed concurrently herewith, and all divisions and continuations thereof, and all Patents which may be granted therefor and all reissues and extensions thereof, and authorize and request the Commissioner of Patents to issue all Patents on said invention or resulting therefrom to said Company as assignee of the entire interest, and covenant that I have full right so to do, and agree that I will communicate to said Company or its representatives any facts known to me respecting said invention and testify in any legal proceeding, execute all divisional, continuing and reissue applications and all assignments of said invention and of the right to apply for Letters Patent therefor in all countries, make all rightful oaths, sign all other lawful papers, and generally do everything reasonably possible to aid said Company, its successors, assigns and nominees, to obtain and enforce proper patent protection for said invention in all countries.

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 20th day of December, 1957.

/s/ Robert Regis

L. S.

State of New York
County of Queens

ss.:

On this 20th day of December, 1957, before me, a Notary Public in and for the State and County aforesaid, personally appeared ROBERT REGIS, to me known and known to me to be the person of such name, who signed and sealed the foregoing instrument, and who acknowledged the same to be his free act and deed.

/s/ Caroline B. Scott
CAROLINE B. SCOTT

Notary Public, State of New York
No. 30-8887200

Quailified in Nassau County
Cert. filed with Queens County Clerk
Commission Expires March 30, 1968

Notarial Seal

Plaintiff's Exhibit 3

STATE OF ILLINOIS

OFFICE OF THE SECRETARY OF STATE

To all to whom these Presents Shall Come, Greeting:

I, CHARLES F. CARPENTIER, Secretary of State of the State of Illinois do hereby certify that HAZELTINE RESEARCH, INC., a domestic corporation, incorporated under the laws of this State March 28, 1946, appears to have complied with all the provisions of the Business Corporation Act of this State, relating to the filing of annual reports and payment of franchise taxes, and as of this date, is in Good Standing as a domestic corporation of the State of Illinois.

In Testimony Whereof. I hereto set my hand and cause to be affixed the Great Seal of the State of Illinois, Done at the City of Springfield this 27th day of March A.D. 1963.

[SEAL]

/s/ Charles F. Carpentier
Secretary of State

* * * *

Dec. 20, 1949

C. P. CARLSON

2,491,644

ATTENUATOR

Filed Aug. 24, 1945

2 Sheets-Sheet 2

FIG. 5

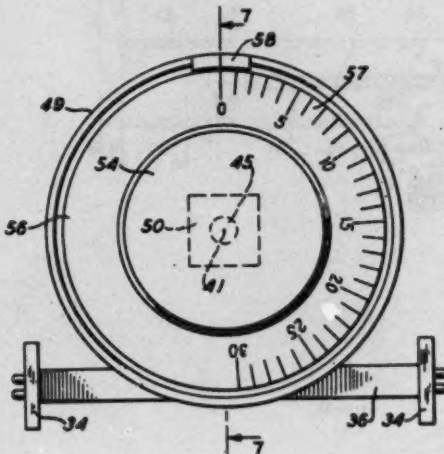


FIG. 6

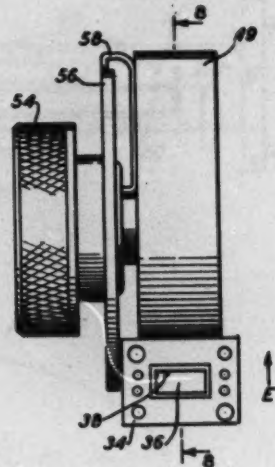


FIG. 7

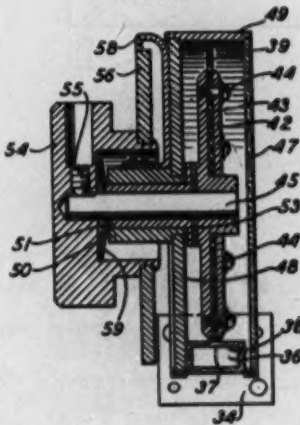
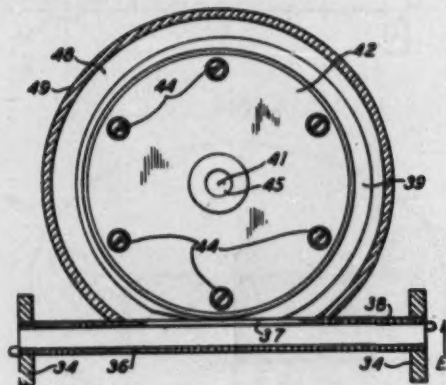


FIG. 8



INVENTOR
C. P. CARLSON
BY

Ralph T. Holcomb
ATTORNEY

Dec. 20, 1949

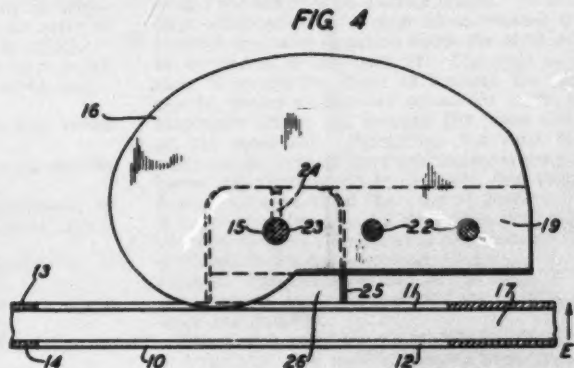
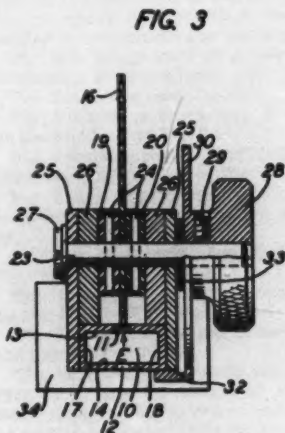
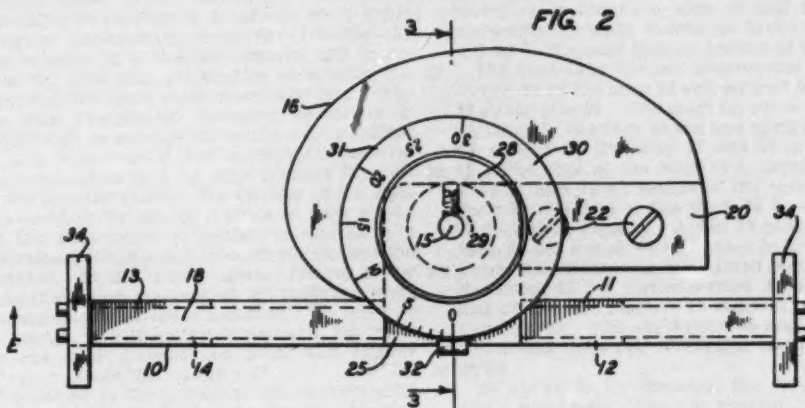
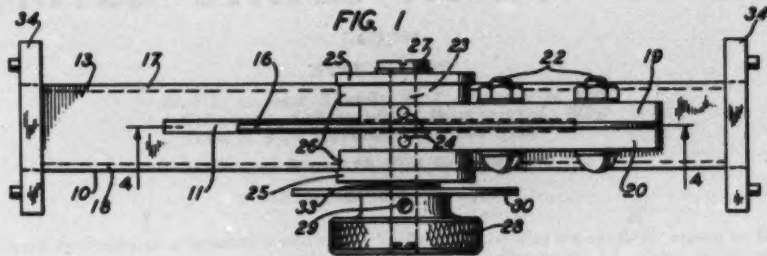
C. P. CARLSON

2,491,644

ATTENUATOR

Filed Aug. 24, 1945

2 Sheets-Sheet 1

INVENTOR
C. P. CARLSON

BY

Ralph F. Holcomb
ATTORNEY

Patented Dec. 20, 1949

2,491,644

UNITED STATES PATENT OFFICE

2,491,644

ATTENUATOR

Carl F. Carlson, Tenafly, N. J., assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application August 24, 1945, Serial No. 612,394

13 Claims. (Cl. 175-44)

1

This invention relates to attenuators and more particularly to variable attenuators for use with wave guides.

The principal object of the invention is to attenuate electromagnetic energy flowing in a hollow wave guide. Other objects are to make the attenuation in decibels of a variable wave guide attenuator substantially proportional to the angular rotation of a resistive element and to increase the maximum attenuation obtainable.

The variable wave guide attenuator in accordance with the present invention comprises a straight, hollow wave guide having a longitudinal slot in a wall thereof and a rotatable resistive vane mounted so that its edge projects through the slot into the guide. The contour of the vane deviates from the arc of a circle in such a way that the attenuation in decibels is substantially proportional to the angle through which the vane is rotated. In this way, congested regions in the attenuation scale are avoided, permitting a more accurate setting of the attenuator. To increase the maximum attenuation obtainable the vane may cut clear through the guide and emerge through a second slot in the wall.

The nature of the invention will be more fully understood from the following detailed description and by reference to the accompanying drawing, in which like reference characters refer to similar or corresponding parts and in which:

Fig. 1 is a top view of a two-slot wave guide attenuator in accordance with the invention;

Fig. 2 is a side view thereof;

Fig. 3 shows a transverse cross-section taken on the line 3-3 of Fig. 2;

Fig. 4 shows a partial longitudinal cross-section taken on the line 4-4 of Fig. 1;

Fig. 5 is a side view of another attenuator in accordance with the invention, employing only a single slot;

Fig. 6 is an end view of the attenuator of Fig. 5;

Fig. 7 shows a transverse cross-section taken on the line 7-7 of Fig. 5; and

Fig. 8 is a longitudinal cross-section taken on the line 8-8 of Fig. 6.

The variable wave guide attenuator shown in Figs. 1, 2, 3 and 4 comprises a hollow, straight wave guide 10 having two oppositely disposed slots 11 and 12 in the opposite sides 13 and 14, respectively, and a resistive vane 16 rotatably mounted about the pivot point 15 so that its edge will enter the guide 10 through the upper slot 11 and emerge through the lower slot 12. The vane 16 is preferably positioned parallel to the transverse electric

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field of the electromagnetic waves to be attenuated. In the guide 10, which is of rectangular cross-section with unequal cross-sectional dimensions, this field is ordinarily parallel to the narrower sides 17 and 18, as indicated by the arrow E in Figs. 2, 3 and 4. The slots 11 and 12 are, therefore, in the wider sides 13 and 14 and are preferably centrally located so that the vane 16 will be in the most intense portion of the field.

The vane 16 is clamped between the two blocks 19 and 20 by the bolts 22 and secured to the shaft 23 by the pins 24. The shaft 23, which has a head 27, turns in bearings in the two upright supports 25, secured to the sides 17 and 18 of the guide 10. The edge of the vane 16 is centered in the slots 11 and 12 by means of the spacers 26. A knob 28 attached to the shaft 23 by a set screw 29 facilitates turning. A dial 30 attached to the knob 28 has a scale 31 calibrated in decibels upon which the attenuation introduced may be read at the index 32. A spring washer 33 between the dial 30 and the support 25 takes up end play in the shaft 23. The end flanges 34 are provided for connecting the guide 10 to other sections of wave 25 guide.

As shown in the drawing, the vane 16 is entirely withdrawn from the interior of the guide 10 and the attenuation reading is zero. To introduce attenuation, the vane 16 is rotated in a counter-clockwise direction about the pivot point 15 by means of the knob 28. The edge of the vane 16 enters the guide 10 through the upper slot 11, passes all the way across the guide, and eventually comes out through the lower slot 12 35 on the other side. Permitting the vane 16 to extend clear through the guide increases the maximum attenuation obtainable with the attenuator. The contour of the vane 16 preferably so deviates from the arc of a circle that the attenuation in decibels introduced is substantially proportional to the angle through which the vane is rotated. Congested regions in the scale 31 are thus avoided and more accurate attenuation settings are possible.

Figs. 5, 6, 7 and 8 show a modified embodiment of a variable wave guide attenuator in accordance with the invention in which the guide has only a single slot. The attenuator comprises a straight, hollow, rectangular wave guide 36 having a slot 37 centrally located in one of the wider sides 38 and a resistive vane 39 mounted for rotation about the pivot point 41 so that its edge will project through the slot 37 into the interior of the guide 36.

The vane 39 is clamped between two circular

2,491,644

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plates 42 and 43 by means of six screws 44 and the assembly is secured to the inner end of the shaft 45. This assembly is enclosed in a metallic shield formed of the two circular plates 47 and 48 and a short cylinder 49 securely attached at its base to the guide 36. The plate 48 carries a journal box 50 in which rotates the flanged cylindrical bearing 51 surrounding a portion of the shaft 45. The edge of the vane 39 is centered in the slot 37 by the washer 52. A knob 54 attached to the outer end of the shaft 45 by a set screw 55 carries a dial 56 with a scale 57, calibrated in decibels of attenuation, which may be read at the index 58. A spring washer 59 between the bearing 51 and the knob 54 prevents end play in the shaft 45.

As shown in Figs. 5, 6, 7 and 8 the attenuator is set at zero and therefore the vane 39 is entirely withdrawn from the guide 36. However, as the knob 54 is turned in a counter-clockwise direction the edge of the vane 39 gradually passes through the slot 37 into the interior of the guide 36 and the attenuation is increased correspondingly. In this attenuator, also, the contour of the vane 39 preferably so deviates from the arc of a circle that the attenuation in decibels is a substantially linear function of the angular rotation.

What is claimed is:

1. A variable attenuator for electromagnetic waves comprising a hollow wave guide having a longitudinal slot in a wall thereof, a rotatable resistive vane mounted so that its edge projects through said slot into said guide, and a metallic shield enclosing said vane, the contour of said vane so deviating from the arc of a circle that the attenuation in decibels is substantially proportional to the angular rotation of said vane.

2. An attenuator in accordance with claim 1 in which said guide has a substantially straight longitudinal axis.

3. An attenuator in accordance with claim 1 which includes a second slot in the wall of said guide, said slots being oppositely disposed and said vane being so shaped that, upon rotation, it cuts clear through said guide and emerges through said second slot.

4. An attenuator in accordance with claim 1 in which said vane is parallel to the transverse electric field of the electromagnetic waves to be attenuated.

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5. An attenuator in accordance with claim 1 in which said guide is of rectangular cross-section and said slot is centrally located in one of the sides thereof.

6. An attenuator in accordance with claim 1 in which said guide is of rectangular cross-section with unequal cross-sectional dimensions and said slot is in one of the wider sides thereof.

7. An attenuator in accordance with claim 1 in which said guide is of rectangular cross-section with unequal cross-sectional dimensions and said slot is centrally located in one of the wider sides thereof.

8. A variable attenuator for electromagnetic waves comprising a hollow wave guide having two oppositely disposed longitudinal slots in the wall thereof and a rotatable resistive vane mounted so that, upon rotation, its edge enters said guide through one of said slots and emerges therefrom through the other of said slots.

9. An attenuator in accordance with claim 8 in which the contour of said vane is so shaped that the attenuation in decibels is substantially proportional to the angular rotation of said vane.

10. An attenuator in accordance with claim 8 in which said vane is parallel to the transverse electric field of the electromagnetic waves to be attenuated.

11. An attenuator in accordance with claim 8 in which said guide is of rectangular cross-section and said slots are centrally located in opposite sides thereof.

12. An attenuator in accordance with claim 8 in which said guide is of rectangular cross-section with unequal cross-sectional dimensions and said slots are in the wider sides thereof.

13. An attenuator in accordance with claim 8 in which said guide is of rectangular cross-section with unequal cross-sectional dimensions and said slots are centrally located in the wider sides thereof.

CARL P. CARLSON.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
2,151,157	Schelkunoff	Mar. 21, 1939

54 A.

Defendant's Exhibit 1B

Feb. 4, 1958

B. E. WALLACE ET AL

2,822,526

WAVEGUIDE SHUTTER

Filed March 24, 1954

2 Sheets-Sheet 1

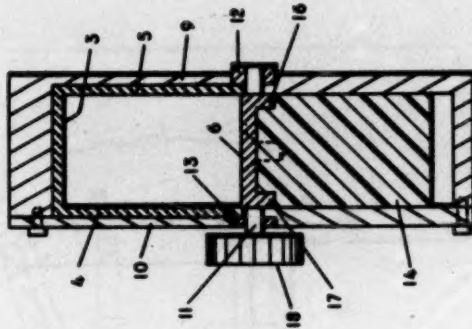


FIG. 2

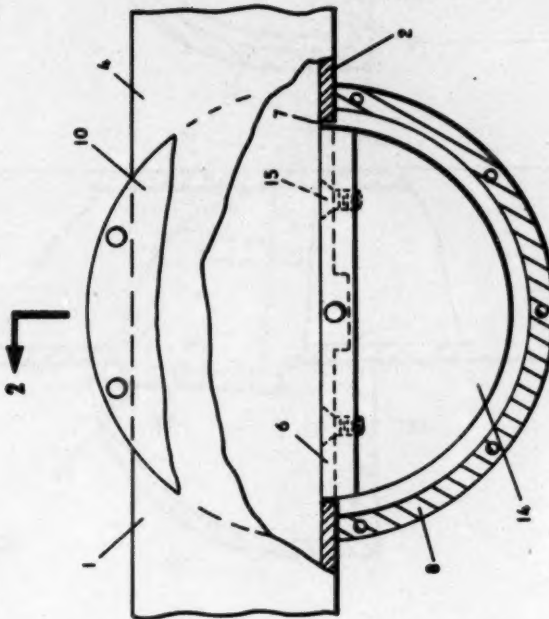


FIG. 1

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Feb. 4, 1958

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2,822,526

WAVEGUIDE SHUTTER

Filed March 24, 1954

2 Sheets-Sheet 2

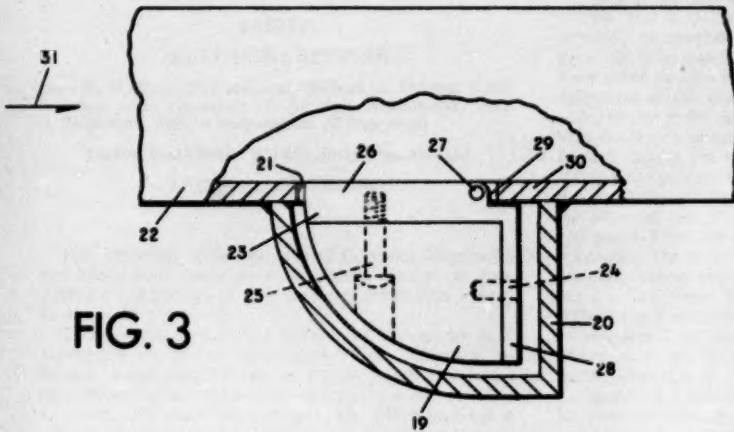


FIG. 3

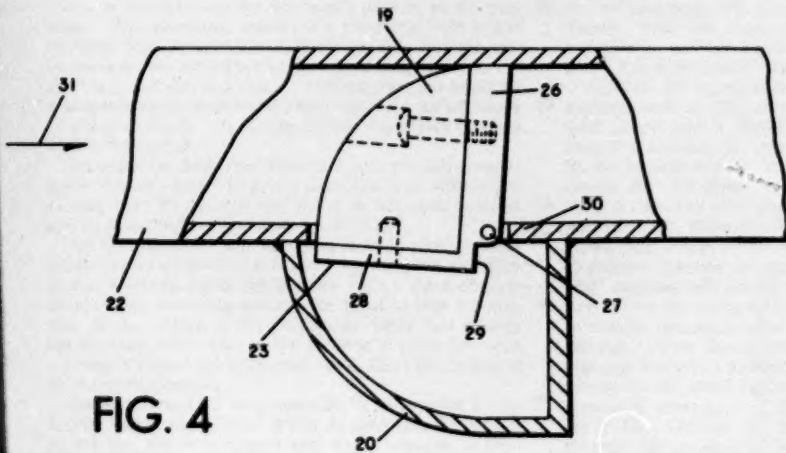


FIG. 4

WILLIAM A. SCANGA
BERT E. WALLACE

INVENTORS

BY

Billy D. Cohen

United States Patent Office

2,822,526

Patented Feb. 4, 1958

1

2,822,526

WAVEGUIDE SHUTTER

Bert E. Wallace, Towson, and William A. Scanga, Baltimore, Md., assignors to Aircraft Armaments, Inc., Baltimore, Md., a corporation of Maryland

Application March 24, 1954, Serial No. 418,334

11 Claims. (Cl. 333—98)

This invention relates in general to power attenuators and more particularly to a waveguide shutter for producing a step change of attenuation of microwave energy flowing in a waveguide.

Conventional devices for attenuating the energy in a waveguide are of two basic types. One employs a reflective metal plate serving as a gate which is inserted into the waveguide transversely thereof to either partially or completely close the passage. The other employs a glass or phenolic plate having a resistive coating thereon which is inserted into the waveguide parallel to the passage. The maximum attenuation attainable with either of these types is approximately 50 decibels and the mechanical means for actuating the attenuating elements are relatively complex and bulky. Furthermore, conventional waveguide attenuators unavoidably decrease the efficiency of a waveguide by introducing abrupt impedance changes within the section.

An object of the instant invention is to provide a waveguide shutter which will give a step change of attenuation of well over 80 decibels and which in the open position has an insertion loss less than 0.3 decibel.

Another object of this invention is to provide a waveguide shutter employing a flange on a movable wall portion of a waveguide in combination with a block of electrical energy absorbing material for effecting high attenuation of the energy in the waveguide while maintaining the standing wave ratio in the guide at a value less than 1.1 over a 10 percent frequency band when the shutter is in the open position.

Another object of this invention is to provide a fast acting waveguide shutter which is mechanically simple to actuate, which is rugged and which occupies a relatively small space.

Still another object of this invention is to provide a waveguide shutter which is economical to manufacture.

Further and other objects will become apparent from a reading of the following detail description, especially when considered in combination with the accompanying drawing, wherein like numerals refer to like parts.

In the drawing:

Fig. 1 is a fragmentary top elevation view of the waveguide shutter.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary top elevation view of a modified form of the shutter shown in the open position.

Fig. 4 is a fragmentary top elevation view of the modified shutter shown in the closed position.

Referring to Figs. 1 and 2, a section of rectangular waveguide 1 is shown having a pair of narrow walls 2 and 3, and a pair of wide walls 4 and 5 wherein micro-

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wave energy applied to the waveguide will flow through the passage defined by the four walls. A segment 6 of narrow wall 2 is cut from the waveguide to provide a generally rectangular opening 7, the length of which is equal to substantially twice the wide dimension of the waveguide and the width of which is equal to the narrow dimension of the waveguide.

A tubular metal housing 8 slightly larger in diameter than the length of opening 7 and having a transverse slot formed therein for receiving the waveguide is arranged relative to opening 7 such that the centerline of housing 8 is located medially of the opening and coincident with the plane of wall 2. A pair of generally circular metal end plates 9 and 10 are secured to housing 8 for rigidly connecting the latter to the waveguide and for forming a closed semicircular cavity in communication with opening 7. End plates 9 and 10 are contiguous with wide walls 4 and 5 and have a step increase in thickness beyond narrow wall 2 as best shown in Fig. 2 so that the height of the cavity will be substantially the same as the narrow inside dimension of the guide.

Segment 6 is carried by housing 8 to serve as a revolving door for closing opening 7. Specifically, this is accomplished by a shaft 11 secured to segment 6 medially thereof and extending transversely of the waveguide and parallel with the plane of the segment. Shaft 11 is mounted in suitable bearings 12 and 13 carried by end plates 9 and 10 respectively.

A block 14 of suitable microwave energy absorbing material such as "polyiron," having a semicircular planform shape and a thickness substantially equal to the narrow dimension of the waveguide is secured at its base to the outside surface of segment 6 by means such as screws 15. As shown in the drawing, by rotating segment 6 from the open position shown in Fig. 1 to a new position 180° disposed therefrom, block 14 will be inserted into waveguide 1, completely blocking the passage. Continued rotation of segment 6 throughout a second 180° segment will return block 14 to the original position within the cavity formed by housing 8 and open the waveguide passage to allow the free flow of energy there-through. With the shutter in this latter open position segment 6 closes opening 7 in the side of waveguide 1 except for the small gap required to permit unobstructed rotational movement of the segment and its associated block 14. Due to the manner in which energy flows through the waveguide, the gaps extending in a direction parallel to the guide will normally tend to produce a power loss and set up an undesirable standing wave in the area of the shutter as a result of energy leakage there-through into housing 8. This undesirable effect is obviated through the use of transverse flanges 16 and 17 formed on the outer edges of segment 6. These flanges 16 and 17 extend outwardly and generally parallel with end plates 9 and 10 to produce a very low impedance path for the waveguide energy such that the effect of the gap is substantially eliminated. That is, energy in the waveguide will flow as though no gap were present. For most satisfactory results the width of the flanges 16 and 17 should be at least $\frac{1}{4}$ of the wave length of the energy flowing in the waveguide and preferably their width should be in the neighborhood of $\frac{1}{4}$ of a wave length.

The amount of attenuation of microwave energy in a waveguide through the use of an absorbing material such as "polyiron" is directly proportional to the quantity of

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absorption material inserted in the guide. For this reason, block 14 is made semicircular with a diameter at its base substantially equal to the length of segment 6 to provide the maximum quantity of absorption material for insertion in the guide while allowing unobstructed rotation of segment 6.

A modification of the waveguide shutter shown in Figs. 1 and 2 is shown in Figs. 3 and 4 wherein the block of energy absorbing material 19 has a planform shape which is approximately a 90° segment of a circle. This configuration, while not providing as large a quantity of absorbing material for attenuating the energy in the waveguide, operates very efficiently, particularly at the lower microwave frequencies, because energy leakage into shutter housing 20, when the shutter is in the closed position as shown in Fig. 4, can be more effectively eliminated. In the modified shutter, the length of opening 21 in the narrow side of waveguide 22 is substantially equal to the wide dimension of the waveguide. The block of energy absorbing material 19 is secured to an L-shaped metal base 23 by means of a positioning dowel 24 and a bolt 25 which threadably engages leg 26 of base 23. The base is swingably carried by a shaft 27 for free movement between the open and closed positions shown in Figs. 3 and 4, respectively, for selectively attenuating the energy traveling in the waveguide in the direction indicated by arrow 31. Shaft 27 is secured to leg 26 and spaced from the point of intersection of leg 26 with the other leg 28 of base 23 so that when the shutter is rotated approximately 90°, to the closed position, leg 28 is spaced from the waveguide as shown in Fig. 4. This avoids the possibility of leg 28 contacting waveguide 22 even with large dimensional tolerances and fills opening 21 with absorbing material to effectively prevent energy leakage around the shutter through housing 20.

Leg 26 of base 23 serves to close opening 21 in the narrow wall of the waveguide when the shutter is in the open position in the same manner that segment 6 closes opening 7 in the configuration shown by Figs. 1 and 2. Instead of using flanges as segment 6 does to negate the effects of the gaps by producing a low impedance path, base 23 is made sufficiently thick to serve the same function without the use of flanges.

A rectangular notch 29 is formed in base 23 at the point of intersection of the legs 26 and 28 which allows waveguide wall 30 to serve as a stop to limit the movement of the shutter and also to reduce the air gap between the waveguide and the shutter when the latter is in the open position.

The operation of the waveguide shutter shown in Figs. 1 and 2 is believed obvious from a reading of the foregoing description. When the shutter is in the open position shown in the drawing, energy will flow through the waveguide with substantially the same efficiency as with a continuous guide having no discontinuities. When it is desired to stop the flow of energy through the waveguide, actuation of a pinion drive means 18 is effected to cause rotation of segment 6 through shaft 11 for a full 180° causing the block of energy absorption material 14 to be inserted in the waveguide passage. The energy flowing in the guide thus contacts the absorption material which causes a very high dissipation of such energy to produce an attenuation in the power level of well over 80 decibels. To again allow the transmission of energy through the waveguide it is only necessary to rotate segment 6 through a second 180° segment to position the absorbing material outside the waveguide and close opening 7.

The operation of the shutter shown in Figs. 3 and 4 is similar to that previously described for the configuration shown by Figs. 1 and 2, except that maximum attenuation is obtained with only 90° of shutter rotation.

It is to be understood that certain alterations, modifications and substitutions may be made to the instant dis-

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closure without departing from the spirit and scope of this invention as defined by the appended claims.

We claim:

1. A waveguide shutter for attenuating microwave energy flowing in a waveguide comprising, a rectangular waveguide defining a hollow passage for the transmission of microwave energy, said waveguide having a pair of narrow and a pair of wide walls, one of said narrow walls having a segment thereof rotatable relative to the waveguide about an axis located medially of the segment and arranged generally parallel with said narrow wall and transversely of said waveguide, said segment having an inner and outer surface and a length no greater than substantially twice the wide dimension of said waveguide whereby rotation of the segment is unobstructed by said waveguide, a semicircular block of microwave absorbing material secured at its base to the outer surface of the waveguide segment, the thickness of said semicircular block being substantially equal to the width of said narrow walls, and means connecting with said waveguide segment for rotating the latter to insert said absorbing material into said waveguide for attenuating the microwave energy flowing therein.

2. A waveguide shutter for attenuating microwave energy flowing in a waveguide comprising, a section of rectangular waveguide, said waveguide having a generally rectangular opening formed in one wall thereof, the length of said opening being substantially twice the width of the walls adjoining said one wall, the width of said opening being substantially equal to the width of said one wall, a generally rectangular metallic plate substantially the size of said opening carried by said waveguide for closing said opening, said metallic plate being rotatable about an axis located medially of said plate and arranged generally parallel with said one wall and normal to said waveguide, a semicircular block of microwave absorbing material secured to one side of said plate, and means for rotating said plate whereby said absorbing material is removably inserted into said waveguide for closing the same and attenuating the energy flowing therein.

3. A waveguide shutter for attenuating microwave energy flowing in a waveguide comprising, a rectangular waveguide defining a hollow passage for the transmission of microwave energy, a semicircular block of microwave absorbing material secured to one wall of said waveguide on the exterior thereof, the radius of said block being substantially equal to the width of the adjoining walls, the thickness of said block being substantially equal to the width of said one wall, the portion of said one wall contiguous with said semicircular block being rotatable relative to said waveguide about an axis located medially of said portion and arranged parallel with said one wall and normal to said waveguide for selectively inserting said absorbing material into said waveguide to attenuate the energy flowing therein, and means connecting with said portion of the waveguide for rotating the same.

4. A waveguide shutter for attenuating microwave energy flowing in a waveguide defining a hollow passage for the transmission of microwave energy, said waveguide having an opening formed in one wall thereof, a metallic plate swingably carried by said waveguide for closing said opening and effectively forming an uninterrupted path for the flow of electrical energy within the waveguide, a block of microwave absorbing material secured to said plate on the exterior surface thereof, and means for swinging said plate whereby said absorbing material is inserted within said waveguide for attenuating the flow of energy therethrough.

5. A waveguide shutter for attenuating microwave energy flowing in a waveguide comprising, a generally rectangular waveguide having a pair of narrow and a pair of wide walls, a segment of one of the narrow walls being rotatable relative to said waveguide about an axis located medially of said segment and arranged generally

3 parallel to said narrow walls and transversely of said waveguide, said segment being substantially rectangular in shape wherein the length thereof is twice the width of said wide walls and the width thereof is substantially equal to the width of said narrow walls, laterally extending flanges formed on said segment at the longitudinal edges thereof for substantially eliminating the electrical discontinuity in the waveguide caused by the gaps between said segment and the adjacent waveguide walls, and a block of microwave energy absorbing material secured to said segment on one side thereof contiguous with said flanges for movement into and out of said waveguide in response to rotation of said segment for selectively attenuating the microwave energy flowing in the waveguide.

6. A waveguide shutter for attenuating microwave energy in a waveguide comprising, a hollow waveguide for conducting microwave energy, said waveguide having an opening formed therein, a door swingably carried by said waveguide for closing said opening, a housing secured to said waveguide and forming an enclosed cavity contiguous with said door, a block of microwave energy absorbing material secured to the outer surfaces of said door within said cavity, means for selectively swinging said door from a position allowing transmission of energy through said waveguide to an attenuating position inserting said block of absorbing material into said waveguide, and flanges projecting laterally from said door and cooperating with said housing for minimizing the electrical discontinuity between said door and said waveguide.

7. A waveguide shutter for attenuating microwave energy in a waveguide comprising, a generally rectangular waveguide defining a hollow passage for the transmission of microwave energy, said waveguide having a pair of narrow and a pair of wide walls, one of said narrow walls having a segment rotatable relative to the waveguide about an axis located medially of the segment and arranged generally parallel with said narrow wall and transversely of said waveguide, said segment having inner and outer surfaces and a length substantially equal to twice the wide dimension of said waveguide, a semicircular block of microwave energy absorbing material secured at its base to the outer surface of said segment, the thickness of said block being substantially equal to the narrow dimension of said waveguide and the radius thereof being substantially equal to the wide dimension of said waveguide whereby rotation of said segment a half revolution will position said block within said waveguide and close said passage to attenuate the flow of energy therethrough, wall projections carried by said waveguide and projecting outwardly adjacent said segment in a direction generally parallel with said wide walls, and laterally extending flanges carried by said segment on the outer surface thereof and cooperating with said wall projections to minimize the electrical discontinuity between said segment and the adjacent waveguide walls, the width of said projections and flanges being at least $\frac{1}{4}$ of the wave length of the energy in the waveguide.

8. A waveguide shutter for attenuating microwave energy in a waveguide comprising, a generally rectangular waveguide defining a hollow passage for the transmission of microwave energy, said waveguide having a pair of narrow and a pair of wide walls, one of said narrow walls having a segment rotatable relative to the waveguide about an axis located medially of the segment and arranged generally parallel with said narrow wall and transversely of said waveguide, said segment having inner and outer surfaces and a length no greater than twice the wide dimension of said waveguide, a semicircular block of microwave energy absorbing material secured at its base to the outer surface of said segment, the thickness of said block being substantially equal to the narrow dimension of said waveguide and the radius thereof being no greater than the wide dimension of said waveguide whereby said segment may be freely rotated to position said block within said waveguide to close said passage

and attenuate the flow of energy therethrough, a housing carried by said waveguide and forming a closed cavity adjacent said segment for receiving said block of energy absorbing material, and laterally extending flanges carried by said segment on the outer surface thereof for cooperating with said housing to minimize the electrical discontinuity caused by the gap between said segment and said waveguide.

9. A waveguide shutter for attenuating microwave energy in a waveguide comprising, a hollow rectangular waveguide for conducting microwave energy having a pair of narrow and a pair of wide walls, one of said narrow walls having an opening formed therein, the width of which is substantially equal to the narrow dimension of said waveguide and the length of which is at least equal to the wide dimension of said waveguide, a door swingably carried by said waveguide for closing said opening, a housing secured to said waveguide and forming an enclosed cavity contiguous with said door, a block of microwave energy absorbing material secured to the outer surface of said door within said cavity, and means for selectively swinging said door from a position closing said opening and allowing transmission of energy through said waveguide to an attenuating position closing said opening and inserting said block of absorbing material into said waveguide.

10. A waveguide shutter for attenuating microwave energy in a waveguide comprising, a hollow rectangular waveguide for conducting microwave energy having a pair of narrow and a pair of wide walls, one of said narrow walls having an opening formed therein, the width of which is substantially equal to the narrow dimension of said waveguide and the length of which is at least equal to the wide dimension of said waveguide, a door swingably carried adjacent one end thereof by said waveguide for closing said opening, a housing secured to said waveguide and forming an enclosed cavity contiguous with said door, the thickness of said door adjacent the longitudinal edges thereof being at least $\frac{1}{4}$ of the wave length of the energy flowing in the waveguide to effectively close the air gap of the opening between said door and said waveguide, a block of microwave absorbing material secured to the outer surface of said door within said cavity, the width of said block of absorbing material as measured perpendicular to the plane of said door tapering from a maximum adjacent one end of said door to a minimum adjacent the opposite end thereof whereby inward swinging movement of said door will freely admit said block of absorbing material into the waveguide passage through said opening, the thickness of said block of absorbing material being substantially equal to the narrow dimension of said waveguide whereby movement thereof into the waveguide passage by rotating said door will substantially completely close both the waveguide passage and the opening for attenuating microwave energy, said actuating means connecting with said door for selectively swinging the same from a position closing said opening and allowing transmission of energy through said waveguide to an attenuating position closing said opening and inserting said block of absorbing material into said waveguide.

11. A waveguide shutter for attenuating microwave energy in a waveguide comprising, a hollow rectangular waveguide for conducting microwave energy having a pair of narrow and a pair of wide walls, one of said narrow walls having an opening formed therein, the width of which is substantially equal to the narrow dimension of said waveguide and the length of which is at least equal to the wide dimension of said waveguide, a door for closing said opening, a hinge carried by said door and spaced from either end thereof a distance no greater than the wide dimension of said waveguide and connecting with said waveguide for allowing swinging movement of the door into the waveguide passage, a housing secured to said waveguide and forming an enclosed cavity con-

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 tiguous with said door, a block of microwave absorbing material secured to the outer surface of said door within said cavity, the maximum radial length of said block as measured from the axis of said hinge being no greater than the wide dimension of said waveguide whereby inward swinging movement of said door will freely admit said block of absorbing material into the waveguide passage through said opening, the thickness of said block of absorbing material being substantially equal to the narrow dimension of said waveguide whereby movement thereof into the waveguide passage by rotating said door will substantially completely close both the waveguide passage and the opening for attenuating microwave en-

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 ergy, and actuating means connecting with said door for selectively swinging the same from a position closing said opening and allowing transmission of energy through said waveguide to an attenuating position closing said opening and inserting said block of absorbing material into said waveguide.

References Cited in the file of this patent

UNITED STATES PATENTS

2,588,934	Miller	Mar. 11, 1952
2,629,048	Dyke et al.	Feb. 17, 1953
2,646,551	Roberts	July 21, 1953

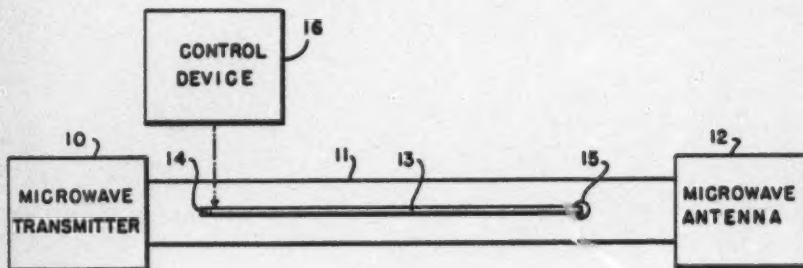


FIG. 1

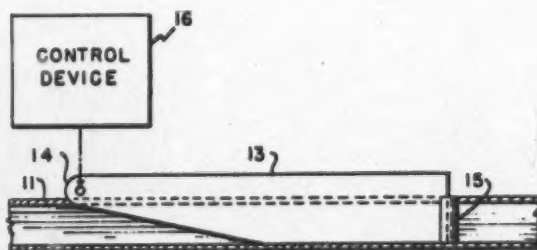


FIG. 2

Defendant's Exhibit 1D

U. S. DEPARTMENT OF COMMERCE
UNITED STATES PATENT OFFICE
Washington

Appeal No. 29098

Before the Board of Appeals

Paper No. 11
In re application of
Robert Regis
Ser. No. 704,770
Filed December 23, 1957
For MICROWAVE SWITCH
Mailed Nov. 10, 1959—Pat. Div. 65

Mr. Laurence B. Dodds for Appellant

Examiner's Answer

This is an appeal from the final rejection of claims 1-8. No claims are allowed.

A correct copy of the appealed claims appears on page 1a of the applicant's brief.

The references of record relied on are:

Carlson 2,491,644 Dec. 20, 1949
Wallace et al. 2,822,526 Feb. 4, 1958
(Filed Mar. 24, 1954)

A description of the claimed switch, of the devices shown in the references and the application of the references to the claims are not believed to be necessary for the following reason. The instant appeal raises only a question of law, namely whether or not the two references, one of which was copending with the instant application, may be combined in the holding that claims

1-3 are unpatentable. The rejection was on one patent issued on an application filed prior to the filing date of the instant application, but issued subsequent to such date, in view of a second patent issued prior to the filing date of the instant application. Appellant concedes that if these two patents are available for use as references that can be combined, their combination negatives patentability on the claim. This concession is expressed in the brief in the sentences on page 2, lines 14-19, as follows:

"There is no need to discuss the actual disclosures of Wallace et al. and Carlson in view of the arguments which follows. Suffice it to say that Examiner asserts that it is possible to combine them as an engineering matter to arrive at applicant's invention. We shall accept the assertion as valid for purposes of argument".

The facts to this issue are as follows:

(1) The Carlson patent was issued prior to the filing date (December 23, 1957) of the present application, while the Wallace et al. patent issued after the filing date of the present application, but was filed (March 24, 1954) earlier than the present application.

(2) The two patents are to inventors different from the one in the present application and no common assignment is apparent.

(3) Applicant has not sworn back of either reference under the provision of Rule 131.

(4) In utilizing the Carlson and Wallace et al. patents as references the Examiner followed the instruction set forth in the third paragraph of Section 706.02 of the Manual of Patent Examining Procedure, as supported by the decisions cited therein and also the decision of *In re Gregg*, 1957 C.D. 284.

Applicant's arguments have been considered, but are not seen as being persuasive as to the alleged intent of

the Patent Act of 1952. It appears to have been well settled law prior to the 1952 Patent Act that co-pending patents having valid effective dates taken singly or in combination, were available as references and that nothing in the Patent Act of 1952 effected a change in this procedure. For authority as to this conclusion, the Examiner cites the following Board of Appeals decisions:

Ex parte Teague and De Padova 108 U.S.P.Q. 380,
Ex parte Machlarski (sic) 111 U.S.P.Q. 459,
Ex parte Kuzmitz 113 U.S.P.Q. 255.

In each of the above cases, substantially the same arguments as advanced in applicant's brief were raised, and in each case, it was held that the Patent Act of 1952 did not change the established policy of utilizing co-pending patents having valid effective dates as references.

In addition the following statement by the Court of Customs and Patent Appeals (In re Gregg 1957 C.D. 284) appears to be directly in point and is quoted in its entirety.

"We are unable to agree with appellant that the prior art referred to in section 103 of the 1952 Act is limited to art which was available to the public prior to the date of the applicant's invention. The section clearly does not make any express statement to that effect, and no reason appears for reading such a limitation into it. It was well settled prior to the 1952 Act that a patent issued on an application which was copending with that of another applicant could properly be used as a reference against the claims of the other applicant even though it did not disclose everything claimed, and it was necessary to combine it with other references. In re Seid, 34 C.C.P.A. (Patents) 1039, 161 F. 2d 229, 73 USPQ 431, and cases there cited. There is nothing to indicate that any change in that practice was contemplated by the Congress when it enacted the Patent Act of 1952."

For the above reasons, the Carlson and Wallace & al. patents are believed to be properly combined. Therefore, since applicant does not otherwise contend that these references are not applicable to claims 1-8, the rejection of these claims is considered proper and should be affirmed.

Respectfully submitted,

/s/ J. E. Sax
Examiner, Div. 65

HSB

HSBertz:ap

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Defendant's Exhibit 1E

Paper No. 16

IN THE UNITED STATES PATENT OFFICE

Appeal No. 290-98

BEFORE THE BOARD OF APPEALS

Mailed Mar. 28, 1962

U. S. Patent Office, Board of Appeals

***Ex parte* Robert Regis**

Application for Patent filed December 23, 1957, Serial No. 704,770. Microwave Switch.

Messrs. Laurence B. Dodds, Edward A. Ruestow, and Andrew L. Ney for appellant.

Before McCann, Kreek and Keely, Examiners-in-Chief.
Keely, Examiner-in-Chief.

This is an appeal from the final rejection of claims 1, 2 and 3, all the claims now in the case.

Claim 1 is representative and reads as follows:

1. A microwave switch for selectively isolating a microwave source from its load comprising: a microwave signal guide for connection to a microwave source at one end and to a load at the other end; and an attenuator vane of resistive material having a tapered end extending toward said source and having a highly conductive strip at the other end thereof and displaceable in and out of said guide for selectively isolating said source from its load when in said guide while maintaining an approximate impedance match to said source.

The references relied upon are:

Carlson 2,491,644 Dec. 20, 1949
Wallace et al. 2,822,526 Feb. 4, 1958

The rejected claims relate to a microwave switch which

is adequately described in appellant's brief to which reference is made.

The claims stand rejected as being unpatentable over Wallace et al. in view of Carlson.

It is asserted by the Examiner that appellant has conceded that if the patent to Wallace et al. is available as a reference then it may be combined with Carlson and that the combination negatives invention in the instant case.

It is the position of the Examiner that prior to the 1953 (sic) Patent Act copending patents either singularly or in combination were valid references. He contends that said Act has not changed this situation and he cites our decisions *Ex parte* Teague et al., 108 USPQ 380; *Ex parte* Machlanski, 111 USPQ 459; and *Ex parte* Kuzmitz, 113 USPQ 255 as well as the Court of Customs and Patent Appeals decision in *In re* Gregg, 44 CCPA 904, 1957 C.D. 284, 720 O.G. 227, 244 F.(2d) 316, 113 USPQ 526 as supporting his position.

Appellant challenged the rejection contending that Wallace et al. is not prior art and for this reason cannot be combined with Carlson.

It is urged by appellant that 35 U.S.C. 102 requires that an appellant must be granted a patent unless one of the prohibitions of the seven sub-paragraphs of this section applies. He considers sub-paragraphs (a), (e) as being the only ones applicable. Pointing to the term "the invention" of these paragraphs he argues that the quoted term requires that his complete device must be found in a single reference before Section 102 is applicable.

He submits that his arguments are fortified by the terms of 35 U.S.C. 103, which uses the following language in referring to 35 U.S.C. 102,

"... not identically disclosed or described as set forth in section 102. . . ."

He concludes that Section 102 restricts the prior art to a single reference, and that Section 103 was intended to supply the only exception.

Turning next to Section 103, he urges that if this Section relates to copending patents then it would be in conflict with Section 102(e) and the latter would be unnecessary. He contends that such an interpretation of the statutes is improper and that Section 102(e) is to stand alone in relation to copending patents.

He considers that his reasoning that Section 103 is inapplicable to copending patents is reinforced by Section 122 which requires that patent applications be kept in secrecy, as well as by numerous decisions holding that copending patents are not part of the prior art for the simple reason that the patent application is not publicly available until the patent issues.

We have reviewed the pertinent sections of the statutes and case law in the light of the Examiner's and appellant's remarks and as a result of our review are in full accord with the position of the Examiner.

It appears to us that the issues raised by appellant have been decided by the Court of Customs and Patent Appeals in *In re Gregg* as well as by us in our previous decisions cited above.

The arguments in appellant's brief appear to be pointless. On page 6, appellant admits that 35 U.S.C. 102(e) enacts the rule of *Milburn Co. v. Davis Bournonville Co.*, 1926 C.D. 303, 344 O.G. 817, 270 U.S. 390, which held that a patent was a reference for what it disclosed as of its filing date.

It is obvious that Wallace et al., as of his filing date, had the structure necessary for modification in the light of Carleon to achieve the disputed claimed structure. Appellant has admitted that the modification is obvious.

Under these circumstances the claimed structure was obviously within the grasp of Wallace et al. about three years and nine months prior to appellant's entry into the field.

Section 103, as we view it, concerns itself only with the circumstances under which a reference that is not anticipatory of the claimed device or method may be used. This section complements sub-paragraphs (a), (b), (e) and (g) of 102 without indicating the type of evidence which will be used to establish obviousness, the qualification of the evidence being found in other sections of the statute and pertinent case law, as for example the cases cited above.

Accordingly, we will sustain the rejection of the claims.

We have carefully considered the contentions and arguments presented in appellant's brief but we are of the opinion that the Examiner's rejection was proper and it will be sustained.

The decision of the Examiner is affirmed.

AFFIRMED

/s/ L. P. McCann
Examiner-in-Chief

/s/ Louis F. Kreek
Examiner-in-Chief

/s/ J. E. Keely
Examiner-in-Chief
Board of Appeals

Laurence B. Dodds
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UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

CIVIL ACTION

No. 1688-62

HAZELTINE RESEARCH, INC., and ROBERT REGIS,
Plaintiffs,

vs.

DAVID L. LADD, Commissioner of Patents,
Defendant.

(Filed Feb. 14, 1964)

OPINION

This civil action was brought pursuant to 35 U.S.C. 145 to obtain judgment authorizing the defendant, Commissioner of Patents, to issue a patent containing claims 1 to 3 of an application Serial No. 704,770 filed December 23, 1957, by the co-plaintiff, Robert Regis. The invention relates to microwave switches.

The tribunals of the Patent Office rejected the claims as unpatentable over the Wallace et al patent No. 2,822,526, in view of the Carlson patent No. 2,491,644. Counsel for plaintiffs concedes that if Wallace et al is available as "prior art" under 35 U.S.C. 103, the combination of Wallace et al with Carlson negates the patentability of the claims. Thus, the sole issue before this Court is whether the Wallace et al patent is "prior art" within the meaning of that term as used in 35 U.S.C. 103.

Counsel for plaintiffs strongly contend that since Wallace et al was a "copending patent",¹ it is "prior art" only with regard to 35 U.S.C. 102(e),² and not with regard to 35 U.S.C. 103.³ If that contention is correct, the judgment here must be in favor of the plaintiffs since neither the Wallace et al patent, nor the Carlson patent alone anticipates the invention described in the claims in suit.

Before specifically considering plaintiffs' contention, it may be noted that prior to the 1952 Patent Act, the Supreme Court in *Detrola Corp. v. Hazeltine Corp.*, 313 U.S. 259, recognized that "copending patents" could be used to invalidate the claims involved in the infringement suit even though none of those patents anticipated the claims.

¹ Although this term is indefinite, it will be used hereinafter to designate patents issued on applications filed *before*, but issuing *after* the filing date of the application or patent which it is cited against as evidence that the claims of said application or patent are unpatentable. For instance, in this case the Wallace, et al application was filed on March 24, 1954, the Regis application was filed on December 23, 1957, and the Wallace, et al application matured into a patent on February 4, 1958.

² This paragraph is a codification of the rule of the first important case in this area, *Alexander Milburn v. Davis-Bournonville*, 270 U.S. 390. Revisor's Note—35 U.S.C.A. 102.

The paragraph reads as follows:

"A person shall be entitled to a patent unless—

* * * *

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the application (sic) for patent,"

³ The pertinent portion of this section reads as follows:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought be patented and the *prior art* are such that the subject matter as a whole would have been obvious at the time the invention having ordinary skill in the art" (sic)

Moreover, in this Circuit, it was well settled that "copending patents", either singly or in combination with other "copending patents", or other patents, or both, are available as references to show that the claimed advance over the prior art required only the exercise of the skill of the art. *Sherwin-Williams Co. v. Marzall*, 190 F.2d 606, 89 U.S.P.Q. 208 (D.C. Cir. 1951); *Dyer v. Coe*, 125 F. 2d 192, 52 U.S.P.Q. 52 (D.C. Cir. 1941), and *Minnesota Mining & Manufacturing Co. v. Coe*, 100 F.2d 429, 38 U.S.P.Q. 513 (D.C. Cir. 1938). But see *Hazeltine Corp. v. Coe*, 87 F.2d 558, 31 U.S.P.Q. 405 (D.C. Cir. 1936).⁴

The Court of Customs and Patent Appeals had also consistently held that "copending patents" were available as references. *In re Downs*, 45 F.2d 251, 7 U.S.P.Q. 316 (C.C.P.A. 1930); *In re Seid*, 161 F.2d 229, 73 U.S.P.Q. 431 (C.C.P.A. 1947), and *In re Youker*, 77 F.2d 624, 25 U.S.P.Q. 421 (C.C.P.A. 1935).

Thus, prior to the Patent Act of 1952, it is clear that as far as the Patent Office and this Court were concerned, a "copending patent" could be used as evidence to show that claims are unpatentable because the differences between the claims' subject matter and the disclosure of the "copending patent" were within the ingenuity and skill possessed by an ordinary mechanic acquainted with the art.

Counsel for plaintiffs contends that the Patent Act of 1952 changed this area of the law. More specifically,

⁴ It should be noted that *Minnesota Mining & Manufacturing Co.*, supra, and *Dyer*, supra, both distinguish the *Hazeltine* case by stating that it "merely held that . . . (since) all of the copending references relied upon therein failed, either singly or in combination to disclose the claims of the later applicant, they did not prevent the issuance of a patent to him as the first inventor. (Furthermore) . . . the Court held, on the merits, that the facts of that case clearly revealed invention." At 100 F.2d 429, 432.

counsel states that since 35 U.S.C. 103 sets forth that "a patent may not be obtained . . . if the difference between the (claimed) subject matter . . . and the prior art . . . would have been obvious *at the time the invention was made . . .*", (Emphasis added), a "copending patent" may not be considered a part of the prior art under Section 103 because "at the time the invention was made" the disclosure therein was not publicly available knowledge due to requirements of 35 U.S.C. 122.

However, counsel for plaintiffs overlooks the fact that "Section 103 . . . is not concerned with the psychological aspects of inventing, but rather with the legal concepts involving hypothetical situations in which the prior art is assumed to include those things dealt with in Section 102". *In re Kander*, 312 F.2d 834, 136 U.S.P.Q. 477 (C.C.P.A. 1963). In other words, that section contemplates an objective standard of patentability, and "the inventor may indeed have made an invention in the psychological sense, but it would nevertheless not be patentable if the quantum of novelty over the prior art material of which he may have been in total ignorance was not sufficient". Federico, *Commentaries On The New Patent Act*, 35 U.S.C.A., at p. 21. Thus, where the technology in a particular art has developed to such a state that "a person having ordinary skill in the art" would find that a certain invention was obvious in view of this state of the art, the invention is not patentable regardless of whether or not it would have been possible for that particular inventor to know the entire state of the art.

Therefore, in view of the fact that the "prior art" under 35 U.S.C. 103 is not limited to materials which an inventor knows or could reasonably be expected to know, the question of whether a copending patent is to be considered a part of the "prior art" under 35 U.S.C. 103 is a matter of policy. Because of the fact that the policy,

the case law, prior to the 1952 Act was to include "copending patents" in the prior art in situations analogous to those now covered by Section 103, it is the opinion of the Court that there would have to be clear, unmistakable language in the Patent Act of 1952, or in its legislative history⁵ before a Court would be warranted in holding that "copending patents" are not "prior art" under 35 U.S.C. 103.

The Court has not found, nor has Counsel for plaintiffs directed its attention to any such language. The Patent Act is unclear on this point; however, the legislative history noted by the Court indicates that the draftsmen of the 1952 Act intended to have "copending patents" be considered as part of the prior art under Section 103. See *Legislative History—Title 35, United States Code* in 2 U. S. Code Cong. & Ad. News, at p. 2399. Moreover, one of the draftsmen⁶ of the 1952 Act, states that "the antecedent of the words 'the prior art' (in 35 U.S.C. 103), . . . lies in the phrase 'disclosed or described as set forth in Section 102', and hence these words refer to material specified in Section 102 as the basis for comparison." Federico, *Commentary On The New Patent Act*, 35 U.S.C.A., p. 20.

While neither the Supreme Court nor the Court of Appeals in this Circuit have ruled on this specific point, the Court of Customs and Patent Appeals has held that the term "prior art" in 35 U.S.C. 103 is assumed to include "copending patents". *In re Gregg*, 244 F.2d 316, 113 U.S.P.Q. 526 (C.C.P.A. 1957), and *In re Kander*, supra. That Court in *In re Gregg*, supra, stated:

"It was well settled prior to the 1952 Act that a patent issued on an application which was copending

⁵ See generally, Rich, *Congressional Intent, or, Who Wrote The Patent Act of 1952?*, in PATENT PROCUREMENT AND EXPLOITATION 61 (BNA 1963).

⁶ Ibid.

with that of another applicant could properly be used as a reference against the claims of the other applicant even though it did not disclose everything claimed, and it was necessary to combine it with other references. (Citation omitted.) There is nothing to indicate that any change in that practice was contemplated by the Congress when it enacted the Patent Act of 1952." At p. 318.

In view of the above, the Court holds that the Patent Act of 1952 did not change the prior law and that "copending patents" are included in the "prior art", as that term is used in 35 U.S.C. 103.

Counsel for plaintiffs has also contended that if this Court holds, as it has above, that copending patents are prior art under Section 103, Section 102(e) will be rendered meaningless because there would be no need for it. That contention is not sound. If it were, the same rationale would apply, for example, to the publications and patents specified in 35 U.S.C. 102(a) and (b). However, it is beyond question that such publications and patents are a part of the prior art under 35 U.S.C. 103.

Therefore, for the reasons set forth above, the Court finds for the defendant and against the plaintiff, and hereby dismisses the Complaint in this case.

The foregoing Opinion includes Findings of Fact and Conclusions of Law.

Dated: February 14, 1964.

JOSEPH R. JACKSON
United States District Judge

75 A

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

CIVIL ACTION
No. 1688-62

HAZELTINE RESEARCH, INC., and ROBERT REGIS,
Plaintiffs,

vs.

DAVID L. LADD, Commissioner of Patents,
Defendant.

(Filed Feb. 14, 1964)

ORDER

This cause came on for trial on October 30, 1963. Upon consideration of the record herein, as well as the oral arguments and briefs which the Court accorded counsel for plaintiffs and defendant an opportunity to file, it is this 14th day of February, 1964,

ORDERED, that judgment be, and the same is hereby entered in favor of defendant, and that the Complaint be, and it is hereby dismissed, with costs to be assessed against plaintiffs.

JOSEPH R. JACKSON
United States District Judge

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

Civil Action No. 1688-62

HAZELTINE RESEARCH, INC., and ROBERT REGIS,
Plaintiffs,

vs.

DAVID L. LADD, Commissioner of Patents,
Defendant.

NOTICE OF APPEAL

Notice is hereby given that Hazeltine Research, Inc. and Robert Regis, plaintiffs in the above-entitled action, hereby appeal to the United States Court of Appeals for the District of Columbia from the judgment entered in this action on February 14, 1964.

HAZELTINE RESEARCH, INC.
and ROBERT REGIS

By Edward A. Ruestow
EDWARD A. RUESTOW
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Little Neck 62, New York
Attorney for Plaintiffs

/s/ George R. Jones
GEORGE R. JONES
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Attorney for Plaintiffs

CERTIFICATE OF SERVICE

I, George R. Jones, counsel for Hazeltine Research, Inc. and Robert Regis, hereby certify that, on the 12th day of March, 1964, I served the foregoing "Notice of Appeal" upon the Commissioner of Patents, United States Patent Office, Washington 25, D. C., by leaving a copy thereof with the clerk or person in charge at the office of the Solicitor of the United States Patent Office, Commerce Building, Washington 25, D. C.

/s/ George R. Jones
 GEORGE R. JONES

Service acknowledged
 March 12, 1964

/s/ C. W. Moore
 C. W. MOORE, Solicitor
 United States Patent Office
Attorney for Defendant

* * * *

STATEMENT OF POINTS UNDER RULE 15

Under the provisions of Rule 15 of this Court, Appellants state the following as the points on which they intend to rely on appeal:

1. That the District Court erred in not ruling as a matter of law that a "copending patent"* is not prior art within the meaning of 35 USC 103; and that a "copending patent" is available as a bar to an application only if it describes the invention of that application as provided in 35 USC 102(e).

2. That consequently the District Court erred in not ruling that the Wallace, et al patent No. 2,822,526, as a "copending patent", is not evidence of the prior art under 35 U.S.C. 103 and therefore may not be combined with

* Using the District Court's definition as follows found in footnote 1 of its opinion:

"Although this term is indefinite, it will be used hereinafter to designate patents issued on applications filed *before*, but issuing *after* the filing date of the application or patent which it is cited against as evidence that the claims of said application or patent are unpatentable. For instance, in this case the Wallace, et al application was filed on March 24, 1954, the Regis application was filed on December 23, 1957, and the Wallace, et al. application matured into a patent on February 4, 1958."

* * * *

Carlson patent No. 2,491,644 to bar appellants' application Serial No. 704,770 here in issue.

Respectfully submitted,

April 23, 1964

/s/ George R. Jones
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Attorney for Appellants

Of Counsel:

EDWARD A. RUESTOW
59-25 Little Neck Parkway
Little Neck 62, New York

* * * *

STIPULATION AS TO CONTENTS OF JOINT APPENDIX

It is hereby stipulated by and between counsel for the parties to the above-entitled action that the following parts of the record in this action be printed in the joint appendix in accordance with provisions of Rule 16(c) of the Rules of the United States Court of Appeals for the District of Columbia Circuit:

1. The complaint of the plaintiffs filed May 25, 1962.
2. The answer of the defendant to the complaint filed June 15, 1962.

3. Plaintiffs' exhibits offered and introduced in evidence at the trial of this action on October 30, 1963, as follows:

- (a) Plaintiffs' exhibit 1—Certified copy of the pending application for Letters Patent of Robert Regis, Serial No. 704,770, filed December 23, 1957.
- (b) Plaintiffs' exhibit 2—Copy of the unrecorded assignment of the invention of Robert Regis relating to improvements in MICRO SWITCH and the application for United States patent therefor Serial No. 704,770.
- (c) Plaintiffs' exhibit 3—Certification of the Secretary of State of the Senate of Illinois of the good standing of Hazeltine Research, Inc. as a domestic corporation of the State of Illinois.

4. Defendant's exhibit offered and introduced in evidence at the trial of this action on October 30, 1963, as follows:

- (a) Defendant's exhibit 1—
 - (A) U.S. Patent No. 2,491,644, granted December 20, 1949, to C. P. Carlson.
 - (B) U.S. Patent No. 2,822,526, granted February 4, 1958, to B. E. Wallace et al. on application Serial No. 418,334, filed March 24, 1954.
 - (C) Print of sheet of drawings (Fig. 1 and Fig. 2) from application of Robert Regis Serial No. 704,770.
 - (D) Examiner's Answer of November 10, 1959, Paper No. 11, of application of Robert Regis, Serial No. 704,770.
 - (E) Decision of Patent Office Board of Appeals of March 28, 1962, Paper No. 16, in application of Robert Regis, Serial No. 704,770.

5. Opinion of the United States District Judge in this action filed February 14, 1964.

6. Judgment of the United States District Judge in this action filed February 14, 1964.

7. The notice of appeal in this action filed March 12, 1964.

8. The statement by the appellants under Rule 15 of the Rules of the United States Court of Appeals for the District of Columbia of the points on which they intend to rely on appeal.

March 12, 1964

/s/ George R. Jones
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Attorney for Plaintiffs

March 12, 1964

/s/ C. W. Moore
C. W. MOORE, Solicitor
United States Patent Office
Attorney for Defendant

[fol. 82]

[File endorsement omitted]

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT
No. 18,563

HAZELTINE RESEARCH, INC., et al., Appellants,
v.

DAVID L. LADD, Commissioner of Patents, Appellee.

Appeal from the United States District Court for the
District of Columbia.

OPINION—Decided November 25, 1964

Mr. Edward A. Ruestow, with whom *Mr. George R. Jones*
was on the brief, for appellants.

Mr. S. William Cochran, Attorney, United States Patent
Office, with whom *Mr. C. W. Moore*, Solicitor, United States
Patent Office, was on the brief, for appellee.

Before Bastian, Wright and McGowan, Circuit Judges.

PER CURIAM: The question involved in this case is
whether a copending patent is part of the "prior art"
within the meaning of that term as used in 35 U.S.C. §103,
and whether a copending patent is a bar to a patent ap-
plication only if it actually describes the invention for
which patent is sought.

Having been unsuccessful in the Patent Office in their
[fol. 83] application for patent, appellants [plaintiffs] filed
suit in the District Court to obtain a judgment authorizing
appellee [defendant], Commissioner of Patents, to issue
the patent applied for by them. The District Court, after
a full hearing, rendered an opinion finding for appellee and
against appellants, and dismissing the complaint. *Hazel-
tine Research, Inc. v. Ladd*, 226 F. Supp. 459 (D.D.C. 1964).

We are in agreement with the opinion of the District Court. Accordingly, it follows that the judgment of the District Court must be and is

Affirmed.

[fol. 84]

[File endorsement omitted]

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT
No. 18,563—September Term, 1964
Civil 1688—62

HAZELTINE RESEARCH, INC., et al., Appellants,

v.

DAVID L. LADD, Commissioner of Patents, Appellee.

Appeal from the United States District Court for the District of Columbia.

Before: Bastian, Wright and McGowan, Circuit Judges.

JUDGMENT—November 25, 1964

This cause came on to be heard on the record on appeal from the United States District Court for the District of Columbia, and was argued by counsel.

On consideration whereof It is ordered and adjudged by this Court that the judgment of the District Court appealed from in this cause be, and it is hereby, affirmed.

Per Curiam.

Dated: Nov 25 1964.

[fol. 85]

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT
Appeal No. 18,563

HAZELTINE RESEARCH, INC. and ROBERT REGIS, Appellants,

v.

DAVID L. LADD, Commissioner of Patents, Appellee.

DESIGNATION OF RECORD—Filed January 26, 1965

The Clerk is respectfully requested to prepare a certified transcript of record for use on petition to the Supreme Court of the United States for writ of certiorari in the above-entitled cause, and include therein the following:

1. Joint appendix to briefs
2. Opinion
3. Judgment
4. This designation
5. Clerk's certificate

Hazeltine Research, Inc. and Robert Regis, By
George R. Jones, 425 Thirteenth Street, N.W.,
Washington, D. C. 20004, NATIONAL 8-4304.

Edward A. Ruestow, 59-25 Little Neck Parkway, Little
Neck 62, New York, Counsel for Appellant.

[fol. 87] Certificate of Service (omitted in printing).

Supplemental Certificate of Service—Filed February 3,
1965 (omitted in printing).

[fol. 88] Clerk's Certificate to foregoing transcript
(omitted in printing).

[fol. 89]

SUPREME COURT OF THE UNITED STATES

No. 919, October Term, 1964

HAZELTINE RESEARCH, INC., et al., Petitioners,

v.

DAVID L. LADD, Commissioner of Patents.

ORDER ALLOWING CERTIORARI—April 5, 1965

The petition herein for a writ of certiorari to the United States Court of Appeals for the District of Columbia Circuit is granted, and the case is placed on the summary calendar.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.